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RECENT ADVANCES IN THE TREATMENT OF CERVICAL CANCER*

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The relative value of a method used in treatment of cancer depends upon survival rates attained and incidence of untoward sequelae following the procedure involved. There was a period during which radiation was accepted almost universally as the method of choice for treatment of cervical cancer. That decision was the result of increase in survival rates and decrease in primary mortality in comparison with the results then obtained by surgery alone. More recently there has been re-exploration of the use of surgery due to advance in operative technic. Stimulus has been given those researchers by the occasional lack of response some lesions show to irradiation, and the contention that a quantity of radiation adequate for control of tumor cannot be delivered to the regional nodes. The surgical program attempts also to overcome the disturbing local reactions that occur as the result of excessive irradiation. Extirpation is being attempted for "operable" cases as well as advanced forms that were formerly considered inoperable.

If the question is raised as to which procedure should be followed in the treatment of cervical cancer, the answer is not yet to be found in statistical analyses. From such data as are available there is rather striking similarity in results among the very early stages of involvement. Among the more advanced forms there is scarcity of surgical data, and many patients are those considered to be irradiation failures making a direct comparison unfavorable to operative removal. Perhaps some form of answer is to be found in criticism of methods of irradiation that have been employed. For the most part x-rays and radium have been applied empirically without any satisfactory degree of precision. Frequent tissue injuries and therapeutic failures are inevitable in such a system. Those untoward sequelae have prompted suggestion that clinical results have reached a plateau beyond which no further improvement is to be expected. There is no real evidence to support such a belief. Advance in knowledge in radiotherapy has established levels of dose tolerance for normal tissues, as well as for cancer cells. Technics have been devised for improving homogeneity in distribution of radiation applied to a tumor. Application of those data in clinical practice should result in improvement comparable to the advances that have been made in surgery.

The aim of radiation treatment is to deliver an adequate dose to the tumor-bearing region with a minimum of damage to normal structures, such as skin, bladder, bowel, vaginal mucous membrane, and tumor bed. The neoplasm simulates a foreign body, and as such incites reactions in the normal tissues of the host. Orderly regression involves the attainment of balance or readjustment between the host's tissues and the

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tumor. To produce the desired end result it is essential to know how much radiation will be required, and the effect to be expected upon all tissues. It is important to know the dose arriving at specified points representative of the whole, and finally to understand the effect of intensity of irradiation upon the biologic changes to be attained.

A system of dosage necessitates use of a unit for specifying amounts of radiation. The contribution from roentgen rays must be given in tissue roentgens arriving in the tumor rather than in "air" or in "skin" roentgens. The use of total milligram-hours of radium is totally inadequate for indicating tissue effects, but has assumed some general meaning in the treatment of cervical cancer. Data upon number of radium sources, location, strength, active length, distance, filter, et cetera, provide means for transposing milligram-hours of radium into gamma roentgens, but the calculations are difficult and tedious. Furthermore, loss of intensity near radium source is high, and variation in dose throughout the tumor is apt to be marked. In the treatment of cervical cancer there is rapid falling off in dose at points lateral to the intra-uterine tandem. Preparation of isodose lines showing distribution of radiation for each patient requires enormous detail. Despite lack of homogeneity, however, it is practical to indicate biologic effect satisfactorily by specification of dose at certain critical points. Data upon amount of radiation arriving at those points then becomes representative of the whole dose in gamma roentgens.

The Manchester system of dosage utilizes points designated as "A" and "B"[1]. Point "A" is located 2.0 cm. lateral to the cervical canal, and at 2.0 cm. depth to the mucous membrane of the lateral vaginal fornix. The location falls in the so-called "paracervical triangle" that contains the crossing of the ureter by the uterine artery. The dose at that point becomes critical by virtue of the fact that overtreatment of the paracervical triangle may result in untoward reactions attributed to excessive irradiation of the bladder, rectum, or cervix. Point "B" is considered at the same level as "A" but located 5.0 cm. from the midline. That will fall near the position of the obturator node, and the dose arriving at that point is indicative of the amount reaching the regional lymph nodes. In addition to the above, it is also necessary to determine the dose arriving at the bladder and the rectum.

The initial problem to be met in planning radiation treatment is selection of a dose believed adequate for control of the lesion in question. The amount of radiation required for destruction of cervical cancer cannot be specified precisely but a reasonable estimation can be given within a range of doses. The intensity of treatment will, of course, affect the total dose to be selected. Various amounts of external irradiation are employed in different clinics, but if it is assumed that an average course of x-rays requires from three to four weeks for application, the tumor should receive between 1,500 and 2,000 roentgens during that period. The amount of trauma produced each treatment day is relatively slight. Due to time over which the total dose is protracted, there will be recovery from some damage before treatment is complete. Marked alterations in tumor may be noted clinically and microscopically, but total destruction of cervical cancer is not to be expected. In absence of radium treatment renewed growth has been demonstrated within a period of two weeks after such a course of x-rays.[2, 3] It is important, therefore, to combine external irradiation and radium application in the attempt to avoid unnecessary recovery by lapse in active treatment. A plan of that sort incurs risk of overexposure, and each method must be adjusted to the other and to the general conditions presented by the patient. The interdependence of x-rays and radium cannot be overemphasized. For a number of years we have scheduled radium treatment for a date following immediately the completion of roentgen irradiation. More recently the radium treatment has been divided into two or more exposures with the

first given near the middle, or in the latter half of the course of x-rays. For such a plan there is evidence that destruction of cervical cancer requires a contribution from radium on the order of 4,000 to 6,000 r gamma if applied within a period of two days,[4] and probably about 6,000 to 8,000 r gamma if applied within a period of seven to ten days. Those values are in good agreement with data given by other authors. It should be noted that the values given here apply to experience with a course of x-rays similar to that described above. In many clinics the amount and sequence of roentgen treatment is different. For example, some authors advocate the use of radium prior to the application of x-rays. One of the stated reasons for following that plan is that radium can be applied within the vagina before any loss of space by contracture. Indications for beginning treatment with x-rays include control of infection, and regression in size of the primary lesion before radium is applied.

After selection of a dose believed adequate for the tumor it then becomes important to know if normal tissues may be expected to recover from damage incurred by treatment. Permanent injury is not apt to occur as the result of external irradiation applied within the limits described above. Occasionally, however, there may be damage to small bowel, and exposure of that structure should be kept at a minimum by use of small skin fields located at regions best suited to the lesion in question. Fletcher[5] has described in detail a rather precise technic for pelvic irradiation.

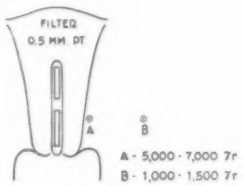
Damage to normal tissues is more apt to result from radium treatment. The bladder and rectum have a fixed relationship adjacent to the uterus and vagina. High dose effects are to be expected in those organs. Tolerance of the rectovaginal septum has been estimated by Tod[6] to be on the order of 8,500 to 9,500 r gamma applied over a period of twenty-one to twenty-eight days. For complete treatment with both x-rays and radium applied within four to six weeks the tolerance level is estimated at a combined dose of about 10,500 roentgens. The vaginal mucosa, on the other hand, will recover satisfactorily after receiving 20,000 r gamma. Such large amounts of radiation will obviously produce considerable scarring and contracture, and should be avoided whenever practical. The bladder will apparently tolerate doses slightly in excess of the stated tolerance of the rectovaginal septum. The cervix and wall of the uterus appear capable of withstanding amounts on the order of 25,000 r gamma. The tolerance dose for the paracervical triangle is at about the level specified for the rectovaginal septum.

A study of radiation effects has been made by reviewing patients treated from 1921-1947. Clinical experience during that period is similar to that which has occurred in other clinics. Application of radium has been upon an empirical basis, and modifications for improvement in technic have been gained through trial and error. Expression of total dose in milligram hours took on some meaning during that period, and only in the past few years has there been greater precision by use of gamma roentgens. The different methods of treatment have been reconstructed for temporary application in patients so as to measure directly the amounts falling upon the bladder and rectum. Calculations have been made for determining average doses arriving at "A" and "B". Clinical results and incidence of complications have been correlated with specification of radium dose. Those results are to be reported in detail by Dr. Sherman, Dr. Bonebrake, and Dr. Ter Pogossian.

Between 1921 and 1936 the principal method of radium treatment was by means of an intra-uterine tandem alone. High intensities were employed, usually on the order of 100 mg. radium. At the beginning a greater amount of radium was placed in the cervical end of the tandem than in the fundal portion. The ratio was approximately 25 mg. above and 75 mg. below. Somewhat later the applicator was changed so that each end of the tandem contained 50 mg. radium. Full treatment was given at one sitting. For the first decade of that

period all patients received a total of 3,000 mg. hrs. radium radiation, but after that time the dose was increased to 5,000 mg. hrs. The contribution from x-rays was relatively small during the period in question. In Figure 1 can be seen a diagram of the

CERVICAL CANCER - RESULTS AND COMPLICATIONS
206 patients followed 5 years - 1921-1936
Radium by tandem alone 3,000 - 5,000 mghrs



STAGE	NUMBER OF PATIENTS	5 YR SURVIVAL PER CENT	COMPLICATIONS PER CENT
I	22	55	40
II	81	42	47
III	84	6	70
IV	19	0	80
	206	24	57

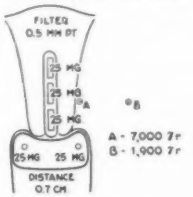
Figure 1. Radium doses arriving at specified points, clinical results, and incidence of complications for method of treatment used 1921-1936.

radium arrangement, and doses falling at specified points. The dose at "A" is 5,000 to 7,000 r gamma. That quantity is within the expected tolerance of that region, except for the high intensity of treatment, and should represent a lethal dose for cervical cancer. At "B", however, the dose falls to 1,000 to 1,500 r gamma. The amount falling within the bladder has been estimated at 8,000 r to 10,000 r and within the rectum at 10,000 r to 12,000 r. Complications are to be expected, and it can be seen that some degree of injury occurred in 57 per cent. The average survival rate is 24 per cent, but it should be noted that the data are not intended to show relative or absolute cure rates. The study upon radiation effects has been made upon patients followed to complication or to death, or for a period of five or more years. Those lost to follow-up with incomplete data upon clinical course have been deleted.

By 1937 the use of vaginal radium had become routine in all patients. There was also reduction in strength of radium sources. Three tubes, each of 25 mg. strength, were used in the intra-uterine tandem. The vaginal sources were held in place by means of a piece of sponge rubber cut to fit the vaginal vault. A tube of 25 mg. strength was placed in each lateral fornix, and if more than 3.0 cm. apart, a weaker source was often placed in the center. It is estimated that the distance between tubes of radium and vaginal mucosa was about 0.5 to 0.7 cm. All patients received a total of 5,000 mg. hours radium radiation. This was applied at a single sitting, but in the later half of the 1937-1947 period, the application was generally made in two approximately equal exposures given about one week apart. For that division the total dose in mg. hours was increased to about 6,000 mg. hours. The contribution from x-rays was increased during the decade in question so that most patients received a tumor dose of about 1,500 r before radium was applied. In some instances transvaginal irradiation was used for an additional 3,000 r to 5,000 r applied directly to the cervix with 100 KV x-rays.

In Figure 2 it can be seen that "A" re-

CERVICAL CANCER - RESULTS AND COMPLICATIONS
245 patients followed 5 years - 1937-1947
Radium by tandem and vaginal sources - 5,000 mghrs



STAGE	NUMBER OF PATIENTS	5 YEAR SURVIVAL PER CENT	COMPLICATIONS PER CENT
I	42	60	36
II	113	44	25
III	76	11	22
IV	14	0	31
	245	35	27

Figure 2. Radium doses arriving at specified points, clinical results, and incidence of complications for method of treatment used 1937-1947.

ceived 7,000 gamma roentgens. That did not exceed the maximum amount previously delivered. At "B" there was an increase, however, that point receiving almost 2,000 r. Superimposed upon the contribution from x-rays there is to be expected some lateral extension of the zone treated adequately. That fact is demonstrated by the improvement that can be seen in survival rates for the different stages of tumor advance as well as for the average result of 35 per cent. For the technic in question, the bladder received about 7,000 gamma r and the rectum approximately 7,400 gamma r. Those amounts are considerably less than the values given in the first series, with clinical evidence of that fact shown by decrease in the total incidence of complication to 27 per cent.

An important factor in the improvement in average results is change in type of clinical material. The percentage incidence of Stage I cases in the 1937-1947 group is almost double that of the 1921-1936 period. At the same time there is advance in survival rate for each stage. The improvement noted in all stages except IV is evidence of extension of the zone of tumor control laterally from the cervical canal. The increase in survival rates is indirect evidence that some lymph node metastases must have been controlled by radiation treatment. At the same time mention should be made of the fact that none of the Stage IV patients survived five years free of tumor. Classification of patients has been both rigid and conservative. It is possible that routine cystoscopy and proctoscopy might have shown evidence justifying more advanced classification for some patients not otherwise recognized as falling into Stage IV. That would not appear, however, to be the full explanation. It is believed that complete failure in the more extensive lesions is due largely to the lesser amount of external irradiation employed in these patients in comparison with that used in some clinics. Furthermore, it has been demonstrated that the amount of radium radiation arriving at the lateral pelvic wall is totally inadequate. The survival rate in Stage IV must necessarily be low, but a method showing zero rate in that group is inadequate. Increase in dose at the lateral pelvic wall, therefore, becomes a critical problem in treatment.

A practical means for increasing radium dose in the lateral parametrium is by means of interstitial irradiation. Needles introduced into the paracervical and parametrial tissues can be used within limit of tolerance for normal structures for a substantial increase in dose at "B". In the series of patients here studied the use of needles was begun in 1937. Frequency of use since that time has increased constantly, but due to technical problems involved the method has not been applied routinely. For the most part needles are employed in patients with extensive vaginal invasion, or in advanced tumors presenting hard, nodular, infiltrating types of lesions. The distribution of radiation is apt to be somewhat irregular with high dose levels scattered throughout the tumor-bearing region. There is also greater risk of sequelae. The method is used in only a limited number of clinics, and has been abandoned almost completely in some. One of the principal sources of error has been failure to use very low intensity sources.

About 1947 our method of irradiation was completely revised. In addition to planning treatment upon data established for tolerance of normal tissues as well as tumor, the whole scheme was modified to one of lower intensity. Radium tubes were standardized with active length of 1.5 cm., external length of 1.7 cm., external diameter 3.0 mm., and wall thickness of 0.5 mm. platinum. Strength of the tubes is 5.0, 10.0, 20.0, and 40.0 mg. radium. The unit system of loading is almost identical to that described in the Manchester System.[1] The average intra-uterine tandem contains three tubes. For a unit strength of 5.0 mg., the upper two sources placed in the tandem are 10.0 mg. each. One unit, or 5.0 mg. radium, is used in the cervical end. By that means the amount of radiation delivered to the paracervical triangle by all sources, including those in the va-

gina, is made somewhat less than for equal amounts of radium placed in the cervix. In point of fact, consideration has been given the use of a blank source in the cervical end of the tandem. Vaginal radium is applied at each lateral fornix by means of rigid plastic applicators that are somewhat oval in shape. Distance between tubes of radium and the adjacent vaginal mucosa is fixed by radius of the ovoids. The applicators are of different size, having equatorial diameters of 2.0 cm., 2.5 cm., and 3.0 cm. Size of ovoid to be used is determined by vaginal diameter. One ovoid is applied into each vaginal fornix, and to increase variability in volume each pair of applicators is held together by a median spacer bar that holds the two in apposition or at a distance of 1.0 cm. Modification of the Manchester ovoids by use of the spacer bar was introduced by Fletcher.[7] For unit of strength in the cervical canal the small applicator is intended for use with three units, the medium with four, and the large with five units. Variation in strength of radium tubes that we established in 1947 is not adaptable to that exact differential in loading.

Use of the lower intensity sources has required increase in total milligram hours of treatment. Furthermore, increase in distance at which vaginal sources are used has also necessitated a greater number of milligram-hours radium in comparison with the sponge rubber technic. As stated before, the average effective distance between vaginal mucosa and a tube of radium loaded into sponge rubber was about 0.7 cm. Upon an empirical basis it was learned that approximately 1,000 milligram hours could be delivered by a 25 milligram source without producing irreparable damage. Contribution from that particular tube would be about 13,000 r. Other sources used in the treatment would also contribute to the region in question thereby increasing the total dose arriving upon mucosa in the lateral fornix. Vaginal ovoids of medium size are currently being used for amounts on the order of 2,000 milligram hours from each wing of the applicator. Contribution of a particular tube to the adjacent mucosa is about 7,000 r. As a result there has been a rather marked fall in the amount of radiation reaction noted in the vagina after treatment.

At the present time patients are being treated with at least two separate applications of radium. These usually fall about seven to fourteen days apart and are planned for a time during and immediately at the end of roentgen treatment. The total dose is on the order of 7,500 milligram hours to 8,000 milligram hours. The dose arriving at "A" is approximately 7,000 r gamma. Tolerance for that region is not exceeded, and for the low intensity involved the dose should be lethal for cervical cancer. Point "B" receives approximately 2,400 r gamma. That amount should be almost half the quantity required for control of cancer. The dose falling upon the bladder and rectum is about 7,000 r gamma, which is within limits of tolerance established for those structures. In the attempt to increase dose levels in the lateral parametrium, there has also been alteration in technic of roentgen treatment. Greater amounts are being employed, but through smaller beams intended to confine the direct radiation to the parametrium with a lesser exposure for the cervix, bladder, and rectum. The course of x-rays requires about one month for completion, and is estimated to contribute a minimum of 2,500 tissue roentgen at "B".

Evaluation of procedures now used cannot be made upon the basis of survival statistics, but improvement in results is to be expected as well as reduction in the incidence of sequelae. Furthermore, there should be an occasional patient in Stage IV found to be free of disease at the end of a five year period.

Among other advances made in radiotherapy there should be mentioned the use of radioactive gold. Used first in animals for experimental evaluation, injection of the material into patients has shown promising results.[8, 9] Radiations emitted by the isotope are within the range found to be therapeutically effective. Dispersion

through tissues is relatively uniform, and the material has affinity for traveling through lymphatics to the regional nodes.

Finally, some comment should be made upon advances in surgery. Carefully planned treatment with x-rays and radium will sometimes result in considerable palliation for the clinically hopeless patient not previously irradiated. Radiation treatment of patients with persistent or reappearing cancer, is, however, notoriously unsatisfactory. Explanation of therapeutic failure can, in some instances, be made upon the basis of error in the primary treatment. The fact remains, however, that patients showing evidence of radiation failure are seen quite frequently. Some of those are due to overtreatment, some to inadequate irradiation, and perhaps others are the result of tumor with resistance equal to or greater than the tolerance of normal tissues. Rarely is much accomplished by additional external irradiation. The use of radium may add to the patient's discomfort by necrosis, slough, and inflammatory reaction. Chordotomy and sedation may provide some relief from pain, but no escape from draining sinuses, fistulae, and the associated infection. Pelvic evisceration, on the other hand, may rehabilitate the patient to an astounding degree. Such an operation is expected to have considerable primary mortality, but it has a most important place in the management of post radiation cervical cancer producing pain, and causing breakdown in tissues about the cervix, bladder, and rectum.

CONCLUSION

In conclusion, there is reason to expect that advances made in radiotherapy will result in increase in survival rates. There should also be decrease in sequelae after treatment. Furthermore, the application of all data now available for radiation treatment should lessen the incidence of therapeutic failures. It may sometime be practical to predict radiosensitivity with a degree of accuracy that will permit selection of patients for surgery at the outset, but until that precision in diagnosis is attained, it appears that the best outlook for the patient is gained by carefully planned treatment by irradiation.

REFERENCES

1. Radium Dosage. The Manchester System. Meredith, W. J., Editor, Williams and Wilkins Co., Baltimore, 1947.
2. Healy, W. P., and Arneson, A. N.: Radiation treatment of carcinoma of the cervix. Am. J. Roent. & Rad. Therap., 32:646-653, 1934.
3. Arneson, A. N., and Stewart, F. W.: Clinical and histological changes produced in carcinoma of the cervix by different amounts of roentgen radiation. Arch. Surg., 31:542, 1935.
4. Healy, W. P., and Arneson, A. N.: A study of carcinoma of the cervical stump developing after subtotal hysterectomy. Am. J. Obst. & Gynec., 29:370, 1935.
5. Fletcher, G. H.: Roentgen treatment of cancer of the cervix. Radiol., 54:832, 1950.
6. Tod, Margaret C.: Optimum dosage in the treatment of carcinoma of the uterine cervix by radiation. Brit. J. Radiol., 14:23, 1941.
7. Fletcher, G. H.: Personal communication.
8. Sherman, A. I., Nolan, J. F., and Allen, W. M.: Experimental application of radioactive colloidal gold in the treatment of pelvic cancer. Am. J. Roent. & Rad. Therap., 64:75, 1950.
9. Sherman, A. I., Bonebrake, MacDonald, and Allen, W. M.: The use of radioactive gold in the treatment of pelvic cancer, to be published Am. J. Roent. & Rad. Therap.

DISCUSSION

Dr. J. V. Schlosser (New Orleans): The optimum technique of radiation therapy for carcinoma of the cervix has yet to be developed; however, studies, such as Dr. Arneson's are leading us surely to our goal. Empirical techniques can no longer be considered adequate. As Dr. Arneson has pointed out, radium therapy, for example, can no longer be analyzed on the basis of milligram hours of exposure alone. Consideration must be given to filtration and active lengths of the radium sources and their distribution, including the dimensions of the applicators used to position the radium. These variables are best correlated by expressing the tissue dosage in gamma roentgens delivered to reference points or to volumes of tissue irradiated. X-ray therapy may similarly be planned in advance to deliver certain precalculated doses to reference zones. Since 1941, the cases at Charity Hospital have been treated by techniques precalculated as to tissue roentgens. Several ranges of dosage and combinations of treatment, have been tried. We have not adopted the Manchester technique, our radium therapy consisting of a precalculated, slightly modified Regaud technique. A multiplicity of foci are used and the vaginal applicators have a radius of 2 cm. These are factors which we feel are important in reducing radiation injury. The dosage of radium has been reduced from 7500 gamma roentgens and for a number of years a tissue dose of 6600 gamma roentgens to the paracervical triangle has been used. No attempt is made to increase the tissue dosage at the lateral pelvic wall by means of radium therapy. This is accomplished by external x-ray therapy. Whenever possible small x-ray fields are used (5.5 cm x 10 cm.) separated by a shielded gap of 4 cm. in the

midline. It is our opinion that by so sparing the lower intestinal tract and bladder, the incidence of late injuries is reduced. Total energy absorption is also reduced, thus minimizing radiation sickness. Thereby less stress is placed on the patient's reparative economy. Doses at Point B have ranged from 2200 r to 4400 r. At the present time we feel that the best dosage is 3000 r plus or minus 10 per cent. It is important to stress the fact that x-ray and radium techniques should be designed as a single unit. The two sources of radiation are mutually complementary. They cannot be considered as isolated methods of treatment. Distribution in time is also extremely important. Prompt execution of the over-all plan is essential to success. At the present time we feel that a period of twenty-one to twenty-four days of x-ray therapy should be followed immediately by the radium application. Permanent undesirable sequelae following irradiation therapy have been pointed to as one of the reasons for adopting surgical management for primary carcinoma of the cervix. This line of reasoning arises in the concept that in order to increase cure rates, one must intensify the tissue dosage and per se, the rate of injury will increase. As a matter of fact, more intensive dosage schedules do not necessarily result in higher cure rates. The healing of the tumor following radiation therapy is a result of numerous complicated and as yet not well understood phenomena. Failure of response after too aggressive treatment has been observed and the British workers have applied the term "supralethal" effect to this phenomenon. Better planning of techniques, as well as more conservative doses reduces the incidence of injury as Dr. Arneson has indicated. This has been well supported by our experience, since in 320 cases treated by empirical techniques, the incidence of severe permanent complications was 14.7 per cent; whereas that for 390 cases treated by precalculated techniques was 8.7 per cent. It should be pointed out that we have considered as complications only those late and permanent complications of radiation therapy, whereas Dr. Arneson's selection has been made on a much more stringent basis. Thus Dr. Arneson classifies as complications all of the early transient radiation reactions such as cystitis and proctitis, as well as the late permanent complications. Nor was the patient's chance for cure sacrificed with the reduction in complications, for under precalculated techniques our salvage rates have consistently improved. For primary cases of carcinoma of the cervix, the absolute five-year salvage rate in 1,210 cases is 30 per cent; whereas for 198 cases treated during the final year of the study, the salvage rate is 41 per cent. This leads us to conclude with Dr. Arneson that salvage rates can be steadily improved while the incidence of injury is reduced. For this reason we feel that in the management of primary carcinoma of the cervix, radiation therapy is the procedure of choice.

VULVOVAGINITIS*

JASON H. COLLINS, M. D.
CHARLES J. ELLINGTON, JR., M. D.

NEW ORLEANS

Vaginitis and vulvitis are terms applied to any changes from the normal observed in these organs, be they irritation, inflammation, ulceration, atrophy or neoplasms. The conditions are by far the most common encountered by those treating the female patient.[1] Not only are these organs subject to local factors resulting in changes but are affected by a wide variety of systemic abnormalities whether endogenous or exogenous in origin. Furthermore, systemic conditions often lower resistance in these tissues or alter their normal physiology so that local factors more easily produce pathological states. An attempt to list all the factors one must consider when presented with the problem of vulvovaginitis results in a long list of diseases and agents which one readily recognizes as mirroring most of the causes of the common ailments of humanity.

ETIOLOGY

I. Systemic Diseases
   - A. Diabetes
   - B. Deficiencies
     1. Vitamins A, B
     2. Achlorhydria
   - C. Jaundice
   - D. Glucose metabolism
   - E. General skin disease
     1. Lichenification
     2. Eczema
     3. Scleroderma
     4. Pemphigus
   - F. Diseases of the Central Nervous System

II. Psychogenic
   - A. Neurodermatitis

III. Allergies
   - A. Food
   - B. Pollens (hay fever)

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C. Venenata (contact)
   1. Nylon, rayon, wool
   2. Perineal pads
   3. Nail polish
   4. Soap
   5. Perfumes
   6. Powder
   7. Toilet tissues
   8. Condoms and diaphragms
   9. Lubricants

D. Medicamentosa
   1. Douche powders
   2. Laxatives
      a. Phenolphthalein
   3. Barbiturates
   4. Narcotics
   5. Iodides
   6. Bromides

IV. Bacterial
   A. Neisseria
      1. Gonococcus
      2. Sica
   B. *Streptococcus*
      Anaerobius
      Gamma
      Alpha
      Hemolytic
   C. *Staphylococcus*
      Albus
      Aureus
   D. *B. Coli*
   E. Shigella
   F. Urea splitters
   G. *Mycobaterium tuberculosis*
   H. *Bacillus crassus*

V. Protozoan and helminths
   A. *Trichomonas vaginalis*
   B. *Endamoeba histolytica*
   C. Trichiura
   D. *Oxyuris vermicularis*

VI. Fungi
   A. *Candida albicans*
   B. *Candida stellatoidea*
   C. *Candida trpoicalis*
   D. Tinea
   E. Actinomyces

VII. Insects
   A. Scabies
   B. Peidiculosis pubis
   C. Ticks
   D. Fleas
   E. Myiasis

VIII. Trauma
   A. Masturbation
   B. Tight clothing
   C. Foreign bodies

IX. Pregnancy

X. Atrophies
   A. Senile vaginitis
   B. "Kraurosis"
   C. Post radiation

XI. Anatomical
   A. Cystocele
   B. Rectocele
   C. Prolapse
   D. Fistulae
   E. Lacerations
   F. Fissures
   G. Congenital anomalies
   H. Phimosis
   I. Obesity

XII. Genitourinary diseases
   A. Salpingitis
   B. Cervicitis
   C. Uterine diseases
   D. Bartholinitis
   E. Skenitis
   F. Cystitis
   G. Urethritis
   H. Caruncles
   I. Ectropion

XIII. Diseases of rectum and anus
   A. Hemorrhoids
   B. Fissures
   C. Prolapse
   D. Parasites
   E. Anal incontinence

XIV. Neoplasms
   A. Benign
   B. Malignant
   C. Condylomata accuminata

XV. Leukoplakia

XVI. Venereal diseases
   A. Gonorrhea
   B. Syphilis
   C. Lymphopathia venereum
   D. Granuloma inguinale
   E. Chancroid

DIAGNOSIS

Space and time do not permit complete discussion of all these items but the following is given as a working method of approaching the problem as thoroughly as possible.

As in any other problem in medicine, a complete, accurate history is necessary. This includes reference to the patient's family history, allergies such as hayfever, eczema, and hives. The patient's occupation with reference to exposure to dusts or chemicals, clothing, and the type of material with emphasis on the synthetic cloths, particularly nylon, must be investigated.

The patient's habits relative to drugs and laxatives, particularly those containing phenolphthalein must be known. Sexual habits such as masturbation, contraceptives, douches, deodorants, perfumes, powders and all such items require elaboration. The patient's emotional and environmental background must be evaluated. Finally, a thorough knowledge of all former treatments must be outlined with emphasis on douches, ointments, jellies, hormones, antibiotics and last, but by no means least, the history of whether or not these people have had the misfortune of being subjected to radium or x-ray as a form of treatment to the vulva.

The physical examination of the patient includes a general examination of the skin, a search for evidence of systemic disease, parasites, and the general habitus. The pubic and vulval areas are inspected under a good light with aid of a magnifying lens if parasitic infestation such as pediculosis or myiasis[2] is suspected. Any ulcerative lesion present is investigated with smears, cultures, biopsies, darkfields, and serological tests. Any neoplastic nonulcerative lesion demands biopsy. Changes known as leukoplakia, a descriptive term meaning only "white plaque", may represent any change from benign vitiligo to carcinoma. It is impossible to distinguish clinically between these extremes and biopsy is mandatory.

The vagina is next inspected for foreign bodies. This is a "must" in children with a complaint of pain or leukorrhea or pruritus or bleeding. Smears and cultures are made of the vaginal secretions and the organisms of yeast and trichomonads sought. Amebic cervicitis and vaginitis has been reported in the Americas.[3-5] Check is made of urinary continence and the status of the perineal and perianal region. The cervix, uterus, tubes, and ovaries are evaluated. Disease in these organs may be the original site resulting in lowered local resistance.

Laboratory tests essential for a complete evaluation include blood count for anemias, urinalysis for sugar, and stools for intestinal parasites. A glucose tolerance test may be the only way of detecting early diabetes. Many a diabetic has had pruritus vulvae as the initial complaint and though the condition is often associated with *Candida albicans* infection[6] the yeast organism is not necessarily present in diabetic vulvitis. Recent reports of the study of the fluorescence of the vulvar tissues under certain conditions have appeared, but to date the results are inconclusive.[7]

Vaginal smears are of some screening value for malignancy but most valuable for studying the degree of cornification of the vaginal cells. In children or postmenopausal women topical estrogens may be employed in an attempt to produce cornification as a therapeutic measure.[8] To the trained eye, these smears need not be stained as cornified cells are readily recognized in the ordinary saline smear.

TREATMENT

Any treatment of vulvitis and vaginitis should be a complete one. Careful history taking and observation may be more valuable than pathologic or intradermal tests. Suspect sensitization from previous local therapy. Avoid testing during the acute phase as a localized area of sensitivity may become generalized. An unrecognized allergic abnormality may be superimposed on one in which the etiological factor has been previously known, by the specific therapeutic agent to which the patient manifests a sensitivity. The picture then becomes confusing and over-all treatment unsatisfactory. A spot test of any new local medicament twelve to twenty-four hours prior to widespread application may prevent such an occurrence.[9] Not to be overlooked are the alkalies of potassium oleate used as vulcanizing accelerator or antioxidant agents in the manufacture of commonly used contraceptive devices.[10] Allergies can be treated topically or systemically with antihistamines but the best results are obtained when it is possible to identify the allergen and eliminate it or desensitize the patient. A vulvovaginitis associated with hay fever has been reported in children ranging in age from two to twelve years.[11] An example of the difficulty one encounters in locating these allergens is illustrated in the

case recently seen wherein a very thorough history failed to indicate any source until the question of type of cloth this entertainer wore as a Gee string revealed it to be nylon. Substitution of cotton resulted in relief.

Diabetic vulvitis will resist any and all forms of topical treatment, whereas control of the diabetes will effect a complete cure. Faulty food habits and the elimination of excessive sugar from the diet frequently relieves patients who have no clinical or laboratory signs of diabetes. Good nutrition appears necessary to healthy vulvar tissues. Supplemental vitamins, particularly the B complex and vitamin A, seem to have a beneficial effect upon some forms of vulvitis and vaginitis. Leukoplakia vulvae has been reported as responding favorably to large dosages of vitamin A and hydrochloric acid[12] but a word of warning must be interjected. It is deemed unsafe to so treat patients unless biopsies and close supervision are possible. Leukoplakia of the vulva is definitely a premalignant lesion.[13]

Psychological and psychiatric advice frequently helps some of these patients in such conditions as neurodermatitis but the clinician has to realize that a patient who has been having pruritus vulvae of years' or months' duration may appear as or be a psychiatric problem as a result of the pruritus. Evaluation of such patients is most difficult even to the trained psychiatrist. In those in whom the pruritus preceded the psychological changes no amount of psychotherapy will be beneficial; whereas treatment and relief of the symptoms may completely change the personality back to normal.

A host of methods and agents of treatment to local lesions are prevalent. In general the aim is to relieve pain or itching (a form of pain[1]) and to eliminate the cause. In many instances the original causative agent has long disappeared but the secondary changes in skin or vagina that result from the scratching and intensive treatment result in persistence or intensification of the symptoms.

Cleanliness must be secured. Cervical and other pelvic lesions are treated to eliminate pathologic secretion from the pelvic organs. Urinary incontinence[14] or fistulae need correction. Relief from pain or irritation can be secured temporarily with local applications of mild ointments, sitz baths, boric acid packs,[9] resting of affected parts, and avoidance of irritation from clothing. Specific therapy is applied when the diagnosis of the causative agent has been established.

Bacterial vaginitis and vulvitis are not uncommon. These range from such common conditions as impetigo and furunculosis to venereal disease. Most of the common bacteria present elsewhere on the body surface or in the intestinal tract can be isolated and cultured from vulval and vaginal secretions.[15] Seldom do they cause symptoms unless the patient's resistance is lowered systemically or locally by other conditions. In children a common error is the diagnosis of gonorrheal vulvovaginitis based solely on smear findings. Closer study with cultures reveals that many such cases are due to a closely allied gram negative diplococci organism and not to gonococcus.[16]

Treatment of these bacterial lesions is relatively simple with the sulfonamides and antibiotics applied topically or given systemically. In children and postmenopausal women, more rapid cure can be obtained with topical estrogens as adjunctive therapy.

The so called "Lipschutz" ulcer, usually found in adult women, is a bacterial ulcer caused by the *Bacillus crassus*.[17] It responds readily to cleansing measures, sulfonamides and antibiotics.

Hydradenitis suppurativa is a more serious infection of the sweat glands which if neglected may require surgical management. Early treatment with antibacterials is often effective.

Such specifics as podophyllin in alcohol for condylomata accuminata,[18] aureomycin and/or tetra-ethyl ammonium chloride in herpes, emetine for amebic infection,[3-5] and surgery for most neoplastic growths result in cures. Sedation may be necessary or of value when general physical rest would be

an adjunct to specific therapy. Nonresponsive or clinically or histologically suspicious leukoplakia is best handled by vulvectomy. Two, and probably the two most common, causative agents still resist treatment in a fair percentage of cases. These are the trichomonas and yeast organisms.

In a reported series of 500 consecutive cases of obstetrical and gynecological patients 437, or 87.4 per cent, had some type of leukorrhea. Eighty-three, or 19.2 per cent, had demonstrable trichomonas. Pruritus was found in 36 of the 83 cases of trichomoniasis.[19] Trichonomas vaginitis was found in 321, or 26.8 per cent, of 1197 pregnant women who were examined by wet smear. Both trichomonas and yeast were found in 64 or 9.8 per cent of 654 pregnant women. More negro women than white harbored the two infections. This difference is undoubtedly due not to racial predilection but to difference in mode of living, personal hygiene, and nutrition.[20]

Trichmonas vaginitis in many individuals resists treatment and no agent has been discovered that effects 100 per cent cure. At present, the most successful treatment consists of thorough cleansing of the vagina with green soap in water, followed by drying with an ether dampened sponge, then insufflating the vagina, vulva, and perineum with a trichomonacidal powder, floraquin being the more commonly employed. This requires treatment on at least three successive office visits followed by home treatment with suppositories of the same trichomonacide. (Instructions are given all patients to avoid fecal or salivary contamination of the vulva. The use of saliva as a genital lubricant is not uncommon). Resistant cases require thorough urological surveys of both male and female. Ordinarily the home treatment must be carried through two or more menstrual cycles. In postmenopausal women topical estrogen therapy in the form of cream or suppository is advocated as an adjunct. It is believed that the greatest activity of the trichomonad occurs at the lowest estrogen level at which time the mucosal resistance is less, thus permitting increased destruction.[21] Many other preparations such as tetronyl,[22] atabrin,[23] phisodem,[24] and boric acid powder, and silver picrate suppositories[19] have been advocated with varying degrees of success. Tyrothricin[25] and penicillin[26] suppositories have proved unsatisfactory. Aureomycin has been successfully used but often one observes that a yeast vulvovaginitis follows the use of aureomycin. This is attributed to the complete reduction of the bacterial flora of the vagina which allows the yeast organisms to thrive. Yeast vulvovaginitis is commonly seen in the diabetic[6] and in pregnancy. It is reported in patients receiving intensive aureomycin therapy. The prevalence of the organisms was shown in a survey of the skin surfaces of 309 individuals. One hundred and nine presented various skin abnormalities (not moniliasis) and 200 had apparently normal skin surfaces. The sites of culture were the interdigital spaces of hands and feet, the axilla, umbilicus, and inframammary surface of the females. *Candida albicans* was isolated from 1.5 per cent of the normal skin surfaces and from 6.4 per cent of the abnormal skin surfaces.[27]

Candida albicans and *Candida stellatoidea* comprised the majority of strains of yeast obtained by culture from the vagina of 244, or 37 per cent, of 667 pregnant women.[20] *Candida albicans* was most frequently found. Saccharomyces and cryptococcus may be cultured from symptom free vaginas. However only Candida is considered pathogenic.[6] *Candida tropicalis* is another pathogen frequently found. There appears to be no definite relationship of symptomatology and the species of yeast, Quantitative degree of infection with yeast, particularly *C. albicans*, was discovered to be associated with appearance of symptoms of pruritus and discharge. A study should be made to determine whether those persons having no symptoms and harboring a few organisms are in a carrier state or in one of incipient infection.[20]

The diagnosis of yeast vaginitis is made by history and physical examination and confirmed by wet unstained or stained prep-

arations and by culture. The smear may be stained satisfactorily with either Wright's or Gram's stain.[6]

If the initial smears fail to reveal the presence of yeast when it is strongly suspected, culture of vaginal secretions should be made. A very simple culture procedure which requires a minimum of equipment is that of a sterile test tube containing sterile physiological saline kept at room temperature and examined in twenty-four to forty-eight hours. The only disadvantage is that it may reveal contaminates which are not pathogenic.[28] Another excellent culture media is Sabouraud's.

It would be difficult to estimate the incidence of yeast vulvovaginitis. Various studies have reported findings ranging from approximately 2 per cent to 45 per cent. Campbell and Parrott's series of 836 consecutive gynecological outpatients reported an incidence of *Monilia albicans* in 15.9 per cent. Of these 38.3 per cent had signs and/or symptoms of moniliosis. The remaining 61.7 per cent exhibited no signs or symptoms. Carter and Jones, as quoted by Swan and Greenblatt, were able to culture yeastlike organisms from 14 per cent of 100 gynecology patients. In the same report, quoted by Wodruff and Hesseltine, positive results were obtained in 15 to 33 per cent of white and 41 per cent of colored females. Hesseltine states that positive cultures were obtained far more commonly from patients complaining of vulvar itching than in those who were symptom free. In another series of 320 nonpregnant patients, 18 per cent with symptoms and only 7 per cent of the 202 without symptoms revealed positive tests.[5]

The frequency with which yeast is found in the pregnant patient is considerably higher. The incipient and carrier states become manifest probably because the increased vaginal secretion, high in glycogen content, is more receptive to the growth of yeast. Hesseltine and Beckette estimate conservatively that 25 per cent of all gravid women harbor *Candida albicans*. Gardner found *Candida albicans* in 11.5 per cent of 585 obstetrical patients. In a comparative study using wet smears and culture, 321, or 26.8 per cent, of 1197, and 37 per cent of 667 pregnant women, respectively, had yeast or yeastlike organisms. In 232 obstetrical patients positive cultures were obtained in 56 per cent of 48 women with vulvar irritation and only 32 per cent of 184 patients without vulvar complaints.

Adult diabetic patients without vulvitis showed only 12.5 per cent with positive cultures, an incidence comparable to that found in an average group of nonpregnant women; whereas, 95 per cent of the diabetics with vulvitis were found to harbor the yeastlike organism.[6, 20, 29-31]

It has been stated, probably quite truthfully, that symptoms of yeast vaginitis may be relieved during pregnancy but the disease is not cured until after delivery.

We believe that the difficulty to effect cure in the pregnant individual is due chiefly to our reluctance to carry out treatment to the full extent. Our patients apply proprion gel digitally to just within the vaginal orifice. We feel that mechanical application as with the usual applicator is unwise in the same manner that any vaginal instrumentation performed by the patient is hazardous to the pregnancy. Certainly, the pregnancy is of primary importance. For the same reason we forbid douching. During the period of gestation our aim is primarily for symptomatic relief. Proprion gel is ineffective in those cases in which the labia is involved.[28] Here gentian violet becomes the treatment of choice in conjunction with proprion gel. The gentian violet can be applied at the routine office visit or the patient may perform this at home. Desinex powder or ointment is equally effective. We have found that usually only a few such treatments are required.

In diabetics, cure usually follows control of the diabetes and conversely cure is never effected unless the diabetes is controlled.

Many other preparations have been reported in the treatment of mycotic vulvovaginitis. Gentian violet is particularly effective in yeast infections of the vulva, perineum, groin, and anus.[28] Gentian violet

combined with lactic acid, acetic acid, and polyethylene glycol was used on 191 cases.[29] Of these 149 or 78 per cent were considered cured. Five per cent obtained symptomatic improvement but the smears remained positive. Fourteen per cent showed no improvement and had positive smears.

Recinolic acid 3 per cent in a tragacanth-acacia buffered jelly effected a cure of 74 per cent in a group of pregnant patients, and 90 per cent in the nonpregnant. Recinolic acid 3 per cent in a buffered acid (4.5) jelly with .1 percent oxyguinoline sulfate has also been used.[31]

The subject of douches has been left for separate discussion. It is the authors' conviction that the douche is abused. It is difficult to learn the origin of the habit but one seldom encounters patients who do not douche. Commercial advertisements re feminine hygiene are undoubtedly responsible. Not only is the act abused but the agents employed are innumerable and in general of little value from any hygienic or therapeutic standpoint. It is believed that many cases of vulvovaginitis are caused and prolonged by injudicious douching. Physicians should discuss the habit with their patients and inform them that with rare exception, douching is entirely unnecessary and possibly even injurious to the vaginal membranes.[32] When necessary, plain water, saline, or mild acid douches employing household vinegar are all that is needed.

There is one glaring therapeutic evil present today. This is the employment of x-ray or radium to the vulval tissues. We believe and many roentgenologists are beginning to concur, that x-ray or radium should never under any circumstances be used on the vulva. It never is curative and is always injurious.

SUMMARY

1. A general discussion of the problem of vulvovaginitis is presented.

2. Accurate history taking is stressed.

3. Allergens account for a considerable proportion of symptoms of vulvar discomfort.

4. Synthetic cloths, tight clothing, and overtreatment are common etiologic factors.

5. The role of nutrition is discussed.

6. Trichomonas and yeast vaginitis is still the greatest problem, most common, and most difficult to manage.

7. Many cases are of psychological origin but the problem of differentiating from organic cause is still unsolved.

8. The general habit of douching is decried.

9. Radiation as therapy for any vulvar disease is condemned.

10. Accurate diagnosis has no substitute.

REFERENCES

1. Jeffcoate, T. N. A.: Pruritus vulvae, Brit. M. J., p. 1196, (Nov. 26), 1949.

2. Da Silva Pereira, J. M.: Myiasis of the vulva, An. Brasil. de gynic. 24:331, (Nov.), 1947. Abstract 201, Am. J. Obst. & Gynec.

3. Kreutzer, F. L.: Cutaneous amebiasis, Surgery 29:423, (Jan.), 1951.

4. Sen, N. C.: Amoebic vaginitis, Brit. M. J. p. 808, (May 7,) 1949.

5. Weinstein, B. B., and Weed, John C.: Amoebic vaginitis, Am. J. Obst. & Gynec., 56:180, (July), 1948.

6. Suran, R. R., and Greenblatt, R. B.: Propionic acid in the therapy of mycotic vulvovaginitis, a method of diagnosis, J. M. A. Georgia, Vol. 38 #3, March 1949.

7. Macdonald, P. A., and Margolese, M. Sidney: Luminescent phenomena of the external female genitalia, Fertility and Sterility, 1:26, 1950

8. McLane, C. M.: The use of an estrogenic cream in the treatment of senile vaginitis, Ah. J. Obst. & Gynec. 57:1018, (May), 1949.

9. Pillsbury, Donald M.: Physiologic principles in the management of dermatitis, New England J. Med. 244:423, (March 22,) 1951.

10. Clark, G. H. V.: Pruritus vulvae from rubber, due to allergic sensitivity to alkali, Brit. J. Dermat. & Syphil. 60:57, (February), 1948.

11. Mitchell, Wm. L., Suran, Iola, Mitchell, John: Vulvovaginal pruritus associated with hay fever, Ann. Allergy, 6:144, (March-April), 1948.

12. Hyams, M. H. and Gallagher, Phyllis D.: Vitamin A therapy in the treatment of vulvar leucoplakia, Am. J. Obst. & Gynec. 59:1346, (June), 1950.

13. Taussig, F. J.: Diseases of the Vulva, D. Appleton and Co. 1928.

14. Davis, Joshua W.: Vulvitis due to urinary stress incontinence, Urol & Cutan. Rev. 51:635, (Nov.), 1947.

15. Weaver, John D., Scott, Shirley, Williams, O. B.: Bacterial flora found in non-specific vaginal discharge, Am. J. Obst. & Gynec. 60:880, (Oct.), 1950.

16. Weaver, John D.: Non-gonorrhea vulvovaginitis due to Gram negative intracellular diplococci, Am. J. Obst. & Gynec. 60:257, (August), 1950.

17. Hartl, Hubert: Acute non-venereal genital ulcers in women, Zeitsch. f. Geburtsh N. Gynak. 128:307, 1947.

18. Sullivan, Maurice, Friedman, Marion, Hearin, James T.: Treatment of condylomata acuminata with podophyllotoxin, South. M. J. 41:336, (April), 1948.

19. Ferrer, D. Lopez: Some considerations on vaginal trichomoniasis, Ginec. y. Obst. de Mexico, 2:451, (December, 1947.

20. Johnson, C. Gordon, and Mayne, Ruth: Study of the incidence and occurrence of symptoms of vaginal tri-

chomonads and various species of yeast in pregnancy, Am. J. Obst. & Gynec. 55:852, (May) 1948.

21. Chavarnia, H. M.: The treatment of trichomonas vaginitis. The action of topical estrogens, Bol. de la Soc. de Obst. y. Ginec. de Buenos Aires, 26:536, (Nov. 13), 1947.

22. Hundley, J. M., Jr., Diehl, W. K., Shelanski, H. A., Stone, R. L.: Trichomonas vaginalis vaginitis: treatment with a new surface-active trichomonacide, Am. J. Obst. & Gynec. 60:843, (October), 1950.

23. Weed, John C.: Personal Communications.

24. Dula, F. M.: Atabrine in treatment of trichomonas vaginitis, North Carolina M. J. 309, June 1948.

25. Johnson, C. Gordon, Douglas, William, Mayne, Ruth: Treatment of trichomonas vaginalis with tyrothricin, Am. J. Obst. & Gynec. 56:184, (July) 1948.

26. Schudmak, Melvin, and Hesseltine, H. C.: Absorption of penicillin through the human vagina, Proc. Soc. Exper. Biol. & Med., 65:15.

27. Marvin, R. M.: Relative incidence of *Candida albicans* on the skin of persons with and without skin diseases, J. Invest. Dermat. 12:229, (April) 1949.

28. Branscomb, Louise: Mucotic vulvovaginitis, South. M. J. 411:534, (June) 1948.

29. Waters, Edgar H., and Wager, H. P.: Vaginal mycosis in pregnancy: an improved gentian violet treatment, Am. J. Obst. & Gynec., 60:885, (October) 1950.

30. Campbell, Ruby, and Parrott, Max H.: Vulvovaginitis moniliosis, A. J. Obst. & Gynec. 59:1005, (May) 1950.

31. Hesseltine, H. Close and Burkette, Edmund S.: The specific treatment of vaginal mycosis, Am. J. Obst. & Gynec., 58:553, (September) 1949.

32. Dodge, E. L.: Appraisal of value of hygienic vaginal douches, J. Am. M. Women's A., 2:539 (December) 1947.

DISCUSSION

Dr. Lewis S. Robinson (Shreveport): The signs and symptoms associated with vaginitis are probably the most common complaints encountered in the practice of gynecology. These consist of leukorrhea, itching and burning with chafing of the vagina and vulva, dysuria and occasionally pelvic discomfort. As Dr. Collins has so adequately pointed out, the causes of vulvovaginitis are numerous, and treatment must vary accordingly.

Leukorrhea, often associated with pruritus of the vulva, is frequently the complaint which causes the patient to seek medical aid. Normally, there is a small amount of secretion arising from the cervical glands, Bartholin glands, and the sweat glands of the external genitalia. However, when this discharge becomes colored, malodorous, irritating, or sufficient to soil the underclothing it is indicative of a pathological change requiring investigation. Unfortunately, too many of these patients have been dismissed with instructions to 'take a douche' with no effort having been made to determine the etiology of the discharge. A douche in such cases has probably never cured anything. It only washes away the discharge and alleviates some of the symptoms. This can be an unfortunate error, as leukorrhea is often an early symptom in such conditions as diabetes, venereal infections, tuberculosis, and carcinoma of the genital tract. The statement that "all women have a discharge and you need not worry about it unless it is bloody" is erroneous. To quote Dr. Conrad Collins, "It is no more normal for a woman to have a constant discharge from her vagina than it is to have a constant discharge from her nose, eyes, or ears".

Dr. Collins is to be commended for covering such a broad subject so thoroughly and concisely. I do not want to rehash his statements, but would like to emphasize that all lesions of the vulva and vagina should be biopsied to rule out carcinoma. Too, I certainly agree that x-ray and radium are contraindicated in the treatment of lesions of the vulva.

I would like to confine the rest of my discussion to the more common types of vaginitis. Namely, infant, senile, trichomonal, and yeast vaginitis.

Infant vaginitis is characterized by a vaginal discharge which is often due to infection by the gonococcus. However, it may be due to other bacteria, yeast, foreign bodies in the vagina, or pin worms. Certainly it is well not to make a diagnosis of gonococcal vaginitis by smears alone, as culture of the organism is a much more accurate means of diagnosis. Gonococcal vaginitis in children is satisfactorily treated with antibiotics and sulfonamides in conjunction with estrogens.

Senile vaginitis is usually due to infection of the atrophic vaginal epithelium by staphylococci or streptococci. In addition to the usual symptoms of vaginitis, there may be some spotting of blood. Senile vaginitis responds well to estrogen therapy. This can be given by intramuscular injection, orally, or as estrogen vaginal suppositories or creams. The vaginal suppositories or creams are preferred because of the danger of uterine bleeding from administration of estrogens to postmenopausal women. Estrogen creams or suppositories applied once or twice daily for seven to fourteen days, and then every other day for about two weeks, will result in the production of an adult type of vaginal mucosa. Superimposed infections such as yeast and trichomonas are treated according to their etiology.

There have probably been as many different medications tried for the treatment of trichomonas vaginalis vaginitis as for any other condition. A few of the preparations which have been used are tetronyl, floraquin, vioform, devegan, stovarsol, gentian violet, silver picrate, hexylresorcinol, acijel, glycerite of hydrogen peroxide, lauryl sulfate, 75 per cent mercurochrome, and sulfonamide creams and jellies. Many advocate the use of acid douches as all or part of the treatment, whereas others consider them unnecessary or undesirable. Probably one of the most unique plans of treatment advocated was the use of vaginal douches consisting of a liter of warm boiled water to which a small spoonful of kerosene had been added. The percentage of cures using the various medications has been reported as being 50 to 96 per cent. A method of treating trichomonas infections which has produced satisfactory results for one clinician will

often produce poor results for another. Whatever the method one uses, the best results are obtained only when treatment is persistently carried out. There is a certain percentage of failures with any of the approved methods of treatment. This may be due to infection from the trichomonads being harbored in Bartholin and Skenes glands or the bowel. Likewise the male can also be a source of reinfection. If cervicitis is present it must also be treated as this will expedite the cure of the vaginitis and prevent abnormal secretions which favor recurrences.

I have obtained satisfactory results by the use of floraquin in the treatment of this condition. The method used is essentially the same as Dr. Collins described, except that diodoquin tablets are used in conjunction with the suppositories and the powder insufflation. As the trichomonad is a common inhabitant of the rectum it is felt that the diodoquin will reduce the number of these organisms in the bowel and help to prevent reinfection. Treatment with floraquin is continued for at least two months. Then the patient is advised to use the suppositories for about three days after each of the 3 menstrual periods following an apparent cure. Yeast vaginitis has also been treated with propion gel or aci-jel and results have been good.

Frequently yeast or trichomonas vaginitis is associated with so-called nonspecific infections of the vagina. These produce a foul, purulent, profuse discharge such as one sees in gonorrhea. However, Gram's stain will reveal mixtures of staphylococci, streptococci, and colon bacilli. These cases respond well to one of the sulfonamide creams prior to treatment of the specific infection.

UROLOGICAL CONDITIONS RELATED TO GYNECOLOGY*

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SHREVEPORT

The superiority of total over subtotal abdominal hysterectomy has been recognized for many years. However, the possibility that a resident in gynecology might be introduced to pelvic surgery by doing total hysterectomies is a more recent concept. Prior to 1946 it was our feeling that the doctor in training should first do subtotal hysterectomies and as he advanced in experience and skill take over the total operation.

This attitude is reflected in the fact that 83.4 per cent of the abdominal hysterectomies done at Shreveport Charity Hospital in 1944 were of the subtotal variety.

Since 1946 the trend has been strongly in the opposite direction and this has been considered a salubrious move for both residents and patients. However, in 1949 we were given cause to reconsider. Late in the postoperative course of a patient who had had a total hysterectomy it was found that she had partial obstruction of both ureters. Surgical exploration of the ureters was necessary to free dense periureteral adhesions which may have followed bilateral ligation of the ureters. This patient made a difficult recovery and today shows some very interesting and unexplainable kidney pathology.

In November of that year we started a series of cases with two objectives in mind: First, to find what urological pathology was produced by gynecological lesions and was it reversible by surgery? Second, what was the actual incidence of injury to the urinary tract resulting from all types of pelvic surgery?

Of the abdominal hysterectomies presented in this series 92.5 per cent have been of the total type. The vast majority of these operations have been done by the gynecological residents.

MATERIALS AND METHODS

Every patient admitted to the gynecology service from November 1, 1949, to March 1, 1951, was included in this study if any major surgery was anticipated. During the preoperative work-up all of these patients had a screening I.V. pyelogram. A K.U.B. film was taken, then 30 cc. of 35 per cent diodrast were injected intravenously and a 10 mi. and 20 mi. film made.

Between the sixth and eighteenth postoperative days all patients had a cystoscopic examination to determine the patency of the ureters. A retrograde and/or an I.V. pyelogram was done on (1) patient who had shown any preoperative urological pathology, (2) patients with whom any dif-

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ficulty was encountered in passing ureteral catheter, (3) cases in which the operator feared any ureteral injury.

A total of 261 cases was studied.

PREOPERATIVE UROLOGICAL PATHOLOGY AND CAUSE

Thirty patients out of the 261 studied showed a significant degree of hydronephrosis and hydroureter. Thus 11.45 per cent of the lesions that required operation produced changes in the urinary tract.

Fibroids. — Considering fibroid tumors alone, 31.26 per cent of those tumors filling the true pelvis or larger caused hydronephrosis. In all but one of these cases the hydronephrosis cleared following removal of the tumor. That single case showed a 90 per cent return to normal. (Figures 1 and 2.) There were 9 cases of large fibroids which caused displacement of the bladder or ureters without producing upper tract dilatation.

Figure 1. Preoperative retrograde pyelogram in a patient with large uterine fibroids which demonstrates extensive hydronephrosis due to pressure.

Figure 2. Postoperative pyelogram in the same patient showing a 90 per cent return to normal.

Of the smaller fibroids none produced hydronephrosis unless complicated by uterine prolapse or pelvic inflammatory disease. The pelvic inflammatory disease appeared to be significant by decreasing the mobility of the uterus and fibroid to the extent that constant pressure was exerted on one or both ureters. Of the patients with small fibroids and pelvic inflammatory disease 9.09 per cent had hydronephrosis. The pathology was reversible in all of these cases after surgery.

Pelvic Inflammatory Disease.—Five of these patients or 22.72 per cent had a hydronephrosis as a result of the pelvic inflammatory disease. Four of the 5 had large hydrosalpinx or large inflammatory cysts to produce pressure. We feel that this percentage is magnified by the fact that only the patients with more extensive disease came to surgery. The fifth case had smaller hydrosalpinx but had very extensive adhesions along the posterior surface

of the broad ligaments and in the cul-de-sac.

Following surgery the hydronephrosis disappeared in all of these cases.

Uterine Prolapse and Cystocele.—These cases do not appear to be an important cause of hydronephrosis in our series. Of the 70 patients with this diagnosis studied only 2 (2.85 per cent) had any hydronephrosis. One of these patients did not show any less hydronephrosis after operation. It was thought that her diabetic bladder, with infection, might have been partly responsible.

Ovarian Cysts.—There were 9 patients whose only gynecological pathology was an ovarian cyst. These cysts varied from 7 cm. to 39 cm. in diameter. None of these cases showed hydronephrosis.

CONGENITAL ANOMALIES AND INCIDENTAL FINDINGS

There were 3 cases of congenital absence of the kidney. In two patients the left kidney was absent and in one it was the right. One of these was found with a uterus didelphus. One had a Gartner's duct cyst. The other showed no other congenital anomalies but was being studied prior to vaginal hysterectomy for uterine prolapse.

There were 5 cases showing double ureters and double kidney pelves on one side. This gives an incidence of congenital anomalies of the upper urinary tract of 3.07 per cent.

Incidental findings that may be of importance to the patient later were (1) asymptomatic benign cyst of the kidney, (2) one old asymptomatic compression fracture of the fourth and fifth lumbar vertebrae, (3) one lumbar rib, (4) one asymptomatic ureteral calculus, (5) two sacralizations of the fifth lumbar vertebra, (6) one lumbarization of the first sacral vertebra, (7) two occult spina-bifidas, (8) three cases of asymptomatic gallstones and (9) four cases of arthritis of lumbar vertebrae.

TRAUMATIC INJURIES

There were 3 cases of perforation of the bladder. All were recognized and repaired at the time of injury and no complications followed.

Five cases developed hydroureter and hydronephrosis following operation. All cases were entirely asymptomatic and cleared spontaneously and completely within thirty-four days after surgery. They were found only because of the routine survey. None of these cases showed complete obstruction. The cause of this transitory hydronephrosis was thought to be due to edema following trauma and possibly kinking by tight suturing of the cardinal ligaments.

From the entire series 3 patients received serious injury to a ureter. The surgery in each case was performed by a different resident, but in all instances the accident occurred during his first six months of operating privileges. This gives an incidence of ureteral injury of 1.15 per cent. The mortality for the series was nil.

CASE REPORTS

Case No. 1. This patient had a total hysterectomy with bilateral salpingo-oophorectomy in February 1950. The indication for surgery was a right interligamentaary fibroid 7 cm. in diameter.

She remained completely asymptomatic and nonmorbid until the seventeenth postoperative day when she received her routine cystoscopic examination prior to going home. The absence of excretion of indocarmine from the right ureteral orifice and the inability to pass a ureteral catheter or to inject diodrast more than 5 cm. informed us of the obstructive lesion. An I.V. pyelogram demonstrated a nonfunctioning right kidney.

In retrospect the operator thought it likely that the ureter had been ligated during blind suturing to control excessive bleeding at the removed tumor site.

A nephrostomy was done on the nineteeth postoperative day and kidney function returned within one week. Twenty-five days later a transperitoneal exploration of the right ureter was done and a catgut suture was found at the site of the obstruction. The ligature and adhesions were removed and a catheter introduced through the bladder.

At present the patient has moderate hydronephrosis which appears to be a result of the nephrostomy rather than the damage to the lower ureter.

It was interesting to learn that kidney function can return after having been completely blocked for nineteen days.

Case No. 2. The second patient had a large fibroid with pelvic inflammatory disease and an inflammatory cyst 12 cm. in diameter lying in the

left broad ligament. She had a total hysterectomy with bilateral salpingo-oophorectomy in April 1950.

The postoperative course was entirely asymptomatic and nonmorbid. On the eleventh postoperative day cystoscopic examination revealed obstruction in the left ureter about 10 cm. above the bladder. Dye could not be passed in a retrograde manner. The following day the left ureter was explored and treatment was carried out in the same manner as had been done on the first patient.

On the sixteenth postoperative day the I.V. pyelogram demonstrated normal kidney function and no hydronephrosis. Follow-up at one year still shows normal kidney function and no hydronephrosis.

Case No. 3. The third patient was a 47 year old colored woman with bilateral dermoid cysts and small uterine fibroids. Total hysterectomy with bilateral salpingo-oophorectomy was done in February 1951. The patient was ambulatory from the first postoperative day, and had no elevation of temperature after the second day. Cystoscopic examination was done on the eleventh postoperative day. The catheter could not be passed more than 5 cm. up the right ureter and injected dye stopped at the same point. I.V. pyelogram demonstrated normal kidney function and no hydronephrosis. The ureter was visualized well past the sacral promontory with a local diffusion of dye around the distal portion of the visualized ureter.

Extraperitoneal exploration was done at that time and a large quantity (about 3000 cc.) of extravasated urine removed. The ureter was found to be severed apparently from pressure necrosis of a ligature. The ureteral ends were held in proximity by a band of periuteral fascia. Because of the infection a ureteral anastomosis was done over a No. 6 ureteral catheter as a palliative precedure. Multiple rubber dam drains were placed at the site. Six weeks later an anastomosis of the ureter and bladder was performed by the production of a flap tube of the vesical wall by the method described by Ockerblot. It is now three weeks since operation and this patient shows only minimal hydronephrosis. Further improvement is expected with time.

COMMENT

Hydronephrosis in 11.45 per cent of 261 cases requiring gynecological surgery was not as high as was anticipated. The criteria for diagnosing hydronephrosis might make a difference. Even though this figure is not high, it is significant. It becomes more significant when the individual case is studied. We find that tumors filling the true pelvis to the extent that pressure is produced are likely to cause changes in the urinary tract. The same size tumor on a pedicle and lying above the ileopectineal line is not likely to bother the kidney.

Smaller tumors fixed in the pelvis by adhesions or by growing between the layers of the broad ligament are a potential source of kidney damage.

Patients showing such findings should have urological study before electing a conservative policy of observation over a period of years.

An incidence of ureteral injury of 1.15 per cent is high for either sub-total or total hysterectomy. However, it is not higher than the estimated development of cancer in the cervical stump and not nearly so fatal. Using the usual methods of collecting statistics on ureteral injuries not more than 1 of these 3 cases would have been found. The case with the ureteral injury 10 cm. above the bladder could hardly be blamed specifically on the total hysterectomy technique.

This study has promoted a strong relationship between the gynecological and urological departments of our hospital. This feeling of cooperation may be extended to an exchange of residents for part of their first year's training.

We expect to continue total hysterectomies in our teaching program, but will strive to improve the incidence of ureteral damage by keeping aware of the possibility.

SUMMARY

1. Uterine tumors and pelvic inflammatory disease may cause hydronephrosis.

2. The size and location of the tumors as well as the extent of the inflammatory disease are important in causing upper urinary tract pathology.

3. In this series of cases the urological pathology was reversible in all but 2 cases. The pathology was 90 per cent reversible in 1 of these 2 cases.

4. A small number of cases were found to show a transitory postoperative hydronephrosis.

5. The incidence of ureteral injury in this residency teaching program was 1.15 per cent.

6. The 3 cases suffering ureteral injury gave no clinical signs or symptoms up to the time of diagnosis. It is likely that 2

of these cases would never have produced symptoms of kidney damage.

DISCUSSION

Dr. Jack R. Jones (Baton Rouge): The authors are to be commended on the thorough manner in which this study was conducted.

Several findings are significant and should be reiterated: First, the incidence of congenital anomalies of the upper urinary tract was 3.07 per cent. This is higher than most of us are aware of and slightly higher than is usually reported. These anomalies would never have been discovered without a preoperative pyelogram. The experienced gynecologist recognizes a pelvic kidney but he rarely has occasion to explore for other urological deformities. In this series, the operator had the knowledge of these anomalies before surgery was performed. Without this information, it is readily understandable that a higher instance of ureteral injury might have occurred. Yet every gynecologist, when doing a hysterectomy, is alerted to the possibility of damage to the urinary tract.

The 3 cases reported to have had a ureter inadvertently ligated at the time of hysterectomy have all recovered. Nevertheless, this is a serious complication of pelvic surgery and many other patients have not been so fortunate. The mortality rate from ureteral injury varies from 3 to 25 per cent.

A most interesting finding in this series of cases is the return of kidney function after apparent complete obstruction of an ureter for as long as nineteen days. Until recently there has been no clinical evidence of a kidney returning to normal function after a blockage of more than ten days. However, Prentiss and Mullenix have evidence to indicate that there is hope for recovery of the function of a kidney that has been blocked two to four weeks. In my personal experience with 2 cases of ureteral damage, the kidney returned to only 10 per cent normal function after ten days of blockage. The time seems to vary depending upon the age of the patient, existing kidney pathology, and infection.

When ureteral injury is detected, the first mode of treatment should be to relieve the blocked kidney by establishing urinary drainage. Then when the condition of the patient permits, a reconstruction operation may be accomplished.

The incidence of ureteral injury of 1.15 per cent seems high and yet it might have been higher if the cases were not under study and the residents aware of this problem. Most gynecologists do not know their incidence of ureteral injury incurred during pelvic surgery. The literature indicates a 1 to 3 per cent incidence of ureteral injury in pelvic surgery. As pointed out by Dr. Dilworth, there are no definite symptoms of ureteral ligation and a patient may recover from her hysterectomy and yet be unaware that she has lost a kidney. However, one physical finding may be present after ureteral ligation, that is, transitory kidney tenderness due to the back pressure, stretching of the kidney capsule, and ischemia. This finding may be lost if heavy postoperative sedation is used.

This excellent paper should alert every surgeon performing pelvic surgery. I would like to reemphasize that a thorough urological investigation and evaluation should be accomplished before extensive pelvic surgery is contemplated. Then if there is fear of ureteral injury an indwelling ureteral catheter should be inserted before the operation. Only in this way may we avoid serious complications and injuries to the urinary tract.

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MULTIPLE SIMULTANEOUS UNILATERAL TUBAL PREGNANCY

A CASE REPORT

ROBERT KAPSINOW, M. D.
LAFAYETTE

Multiple ectopic pregnancy is an unusual complication of pregnancy. The pathologic criteria for establishing the diagnosis of an ectopic pregnancy were not fixed until approximately 1913. Prior to this time, a hematosalpinx was invariably considered evidence that a tubal pregnancy had existed. It has also been known that in the presence of unilateral tubal pregnancy frequently there is also a moderate amount of congestion in the other tube. For this reason, the historical record of multiple tubal pregnancies prior to 1913 is subject to much doubt.

It was only with positive pathological diagnosis of tissue removed that a more realistic attitude could be taken towards the frequency of multiple tubal pregnancies. Since then, either sections of both tubes or evidence of multiple feti, were necessary.

Stewart in his report on bilateral ectopic pregnancy has reviewed the literature extensively giving a report of a total of 212 cases studied. The cases reported in the literature were divided into three groups. Those in Group 1, consisting of 7 cases, were essentially of value only historically because the majority were found only at autopsy. One hundred and thirty-nine cases that were classified as being in Group II represented no attempt at subdivision into simultaneous or coexistent bilateral ectopic pregnancy. Stewart states that the

66 cases which he placed in Group III are not acceptable because while many of them were undoubtedly bilateral pregnancies, positive criteria are lacking.

The incidence of multiple tubal pregnancy is extremely low. There are a few reports extant indicating a ratio of one case in several hundred ectopics, even in large institutions. However the case that is being reported is even more rare, for it is one of multiple simultaneous *unilateral* tubal pregnancy estimated to be in the third month of pregnancy. An exhaustive search of the literature has failed to uncover a similar case, either in being unilateral or at that stage of advancement.

Clinically, the diagnosis of ruptured tubal pregnancy is not difficult. Medical students have been constantly warned of the necessity of keeping in mind the fact, that any woman in the child-bearing age who misses *one* period and complains of pains in the lower abdomen whether severe or not and who may or not show evidence of bleeding, should be considered as suffering from a ruptured tubal pregnancy until proved otherwise. Whether it is possible to make a preoperative diagnosis of rupture of both tubes when pain is present in both adnexal areas is really academic and must wait for surgical confirmation. There is now no question but that surgery is the only accepted form of treatment. With the frequent use of multiple blood transfusions and antibiotics, the mortality rate following surgery of this condition has steadily fallen. Indeed it is remarkably interesting to see the rapid recovery that is made following surgery as was demonstrated by the case reported here.

CASE REPORT

C. A. S., a colored female, age 30, appeared at the office complaining of weakness. On November 10, 1950, she suddenly stopped menstruating after having been bleeding for five days. Her menses usually lasted from six to nine days. There had been no bleeding since its arrest except a little when she would void. Since then she had become weaker and felt like fainting all the time. Her "stomach had become swollen and hard. The menses prior, she stated, was on October 6 and she had never missed a period nor did she consider herself pregnant.

The family history was of interest only in that it showed that she had had one pregnancy with a viable child, now 12 years of age. She had had no miscarriages or other indications associated with a missed period, all during these twelve years.

Upon examination, it was found that this negress while very well developed and nourished was very pale and her abdomen was considerably distended. In spite of the evident intra-abdominal bleeding, she had a blood pressure of 144/60. Her pulse was 136. The finger nails were blanched at the beds, the mucous membranes of the eyes, mouth and vagina were almost white. The abdomen was dull to percussion, except at the dome. On pelvic examination, it was found that the cervix was soft but the body of the uterus could not be made out. Nothing could be felt in the cul-de-sac. The clinical diagnosis was ruptured tubal pregnancy most likely of the left side, because it was on this side that she suffered most on palpation of the abdomen.

The patient was immediately transferred to Our Lady of Lourdes Hospital. She received a unit of blood at once while preparations for surgery were made.

Operation was performed under cyclopropane. More blood was given. A left rectus incision was made. Upon opening the peritoneum fluid dark blood escaped, and with the first gush, a fetus that was approximately three months old extruded into the wound. The assistant thought it might be due to a ruptured uterine pregnancy because of its size. However, upon immediate palpation, the uterus was found to be normal in size and texture. A mass was located in the left adnexal area which was lifted up into the wound and it was found that in the ampullary portion of the tube there was a mass of placental tissue within which was an amniotic sac and another fetus of approximately the same size as the first. Inasmuch as the left ovary was involved with the placental mass, the left tube and ovary were clamped and excised and the stump transfixed and peritonealized to the left uterine cornua. The right tube was examined before closing and while it was surrounded with much blood clot, there was no indication that its was pathologic. The right ovary was normal. All easily removable clots of blood were withdrawn. No attempt was made to extract suggestive portions of placental tissue that were attached to the sigmoid. The wound was closed in layers. As surgery progressed, the anesthetist reported that the patient became progressively better. The pulse was more firm and slower and the blood pressure remained at approximately 140/80.

Postoperatively, the patient received a third unit of blood, together with penicillin in large doses. During the first twenty-four hours she showed a febrile reaction of slight degree and from then on was afebrile. The wound healed per priman and

on the sixth postoperative day after having removed the sutures, the patient insisted upon going home. She was seen again on December 12, 1950. The wound had healed very well and she was up and about. At that time her menses had not appeared. She returned for examination on January 5, 1951, stating that her menses had recurred on December 27 and lasted through December 30. Frequent reports from other members of her family state that she is perfectly recovered and her menses are normal.

Pathological report: Gross pathology. The specimen consists of two feti, one attached by its umbilical cord to a large ragged mass of tissue; two unidentified pieces of tissue, and a large mass of clotted blood. The feti are of equal size and measure crown-rump 9.0 cm. and crown-heel 13 cm. and weigh 30 grams apiece. The ragged mass to which one is attached by its umbilical cord measures 9.5 by 6.0 cm. in size. Its surface is ragged and blood stained. On inspection it consists largely of placental tissue. The umbilical cord of one fetus leads into one thin walled transparent sac and the stump of the other into another thin walled transparent sac. The two cords insert however into the placental tissue within one centimeter of each other. The larger of the other two pieces of tissue measures 5 by 4 by 2.0 cm. It consists of blood stained soft spongy tissue. The other piece of tissue measures 2.5 by 2.5 by 12. cm. It is soft and spongy and blood stained. The mass of clotted blood measures approximately 7.5 by 4.5 by 2 cm. in size. Representative sections of all portions of the specimen excepting the feti were taken for histological examination.

Diagnosis; Ectopic twin pregnancy. It is impossible to determine from the specimen received whether the pregnancy is confined entirely to the tube or not. At least in one section examined chorionic tissue is adherent to the ovarian tissue. In focal areas in the decidua and placental tissue, areas of acute suppuration are noted.

CECIL L. SINCLAIR, M. D.,
Pathologist.

SUMMARY

An unusual case of simultaneous multiple unilateral tubal pregnancy with rupture and abortion is presented. The exceedingly rare occurrence of this type of complication of pregnancy without the textbook history of symptoms and with rapidity of recovery is noted. No attempt has been made to establish any diagnostic criteria except to recall that pallor, and dullness in the flanks, even with a history of no missed menses, may be due to ruptured ectopic pregnancy.

REFERENCE

Stewart, H. L., Jr.: Bilateral ectopic pregnancy. West. J. Surg. Obst. & Gyn. 58:648 (Nov.) 1950.

URINARY TRACT INFECTION IN CHILDREN*†

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The term "pyuria" is used broadly to include infections such as cystitis, pyelitis and pyelonephritis involving different portions of the urinary tract. This is a common and important condition in infants and children as it has been estimated that between 1 and 2 per cent of the illnesses occurring in this age group is the result of infection of the urinary tract. There is a distinct sex predominance as between 75 and 90 per cent of the cases of pyuria are in females.

ETIOLOGY

The etiology of pyuria varies but in the majority of instances some member of the colon-typhoid group of Gram-negative bacilli is the causative agent. The organism, *B. coli communis* (*Escherichia coli*), is the most common invader. The Gram-positive cocci, especially the staphylococci and streptococci are the etiologic agents in about 20 per cent of the cases. Other organisms such as the dysentery bacillus and members of the Salmonella group are found occasionally. In some cases there is a mixed infection and two or more organisms are recovered consistently in cultures.

Bacterial invasion of the urinary tract may occur by way of the blood stream or by the ascending urogenous route of infection. In view of the fact that infections of the urinary tract occur predominantly in females and that micro-organisms commonly present in the lower intestinal tract are most often involved, it is reasoned that the infection is generally an ascending one. The vagina becomes contaminated with organisms from the rectum and since the urethra is short in the female, the organisms easily reach the bladder.

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Stasis of urine anywhere in the urinary tract is a predisposing factor in the initiation of infection and is the most important cause of persistent and recurring infections.

The pathologic findings are dependent primarily on the location and the duration of the infection and, as will be pointed out later in case reports, are also dependent to a large extent on underlying congenital anomalies.

SIGNS AND SYMPTOMS

The symptoms of pyuria vary extremely in severity. In some instances there is a stormy, severe illness and at times there are no symptoms. The onset may be abrupt with high fever, vomiting, pallor, and, in infants, convulsions. Chills are rarely seen in infants and children but they occur more frequently with pyuria than with other infections. As in all other illness in infants, digestive symptoms, chiefly vomiting, anorexia, and diarrhea may predominate. There may be a sustained elevation of temperature for several days but more characteristically the temperature curve shows wide swings. Symptoms directly referable to the urinary tract are relatively uncommon in infants and young children. There may be anuria. There is at times dysuria as evidenced by crying at the time of voiding. There are no physical findings that may be interpreted as indicating infection of the urinary tract. The evidence of illness is dependent on the severity of the process and is not specific in character. The patient may appear perfectly well or be obviously acutely ill. There is a varying degree of dehydration and there may be an acetone odor to the breath. In rare instances there is costovertebral tenderness on one or both sides.

The urine usually is diminished in amount, is acid in reaction and contains ketone bodies. There is a varying amount of albumin. Pus cells, characteristically in clumps, are present. There may be only a few pus cells per high power field in an uncentrifuged sediment or the urine may be grossly cloudy with pus. There may be a few red blood cells in the sediment. Bacteria usually are present and the causative organism can be determined by cultures of urine obtained by catheterization of females and by clean, voided specimens from males. The white blood cell count is elevated (commonly between 15,000 and 30,000) with a predominance of polymorphonuclear leukocytes.

DIAGNOSIS

The diagnosis of pyuria can be made only from an examination of the urine. Such an infection may be suspected from clinical observation and particularly in instances of high fever in which no obvious cause is discovered on careful examination. In cases of obscure fever, examination of the urine should be done several times as in rare instances pus may not be present for several days after the onset of the illness. The number of white cells which must be present in the urine to warrant the diagnosis of pyuria cannot be stated exactly. Certainly it is not unusual to find occasional pus cells during febrile illnesses and even in normal individuals. The presence of numerous leukocytes in the urine, especially in clumps, and the finding of organisms on culture do warrant the diagnosis.

TREATMENT

The duration of acute pyuria in infants and young children is usually a few weeks when untreated. In the majority of instances where there is no urinary stasis, recovery would take place spontaneously and there would be no recurrence of the infection whether or not specific therapeutic measures were carried out. The response to therapy is so dramatic, however, with almost immediate relief of symptoms, that all such cases should be treated.

The treatment consists first of general, and secondly, of specific measures.

During the acute, febrile stage the patient should be kept on complete bed rest, given a bland diet and large amounts of fluids.

The chemotherapeutic and antibiotic agents which have been discovered during the past few years have proved to be specific in the treatment of pyuria. They have almost entirely replaced the methods of

treatment formerly used which were in general: (1) altering the pH of the urine by giving either alkali or acid in an effort to retard the growth of the causative organisms; (2) urinary antiseptics (such as hexamethylenamine and hexylresorcinol) which at best were relatively ineffective. The use of the ketogenic diet and later mandelic acid in chronic pyuria was effective and in rare instances is still the preferred method of treatment.

The sulfonamides have proved to be effective urinary antiseptics and cases of pyuria usually respond promptly to treatment with these drugs. Sulfadiazine and gantrisin are effective against the majority of organisms which are responsible for infections of the urinary tract and these drugs can be given in smaller doses in the treatment of pyuria than in the case of severe infections elsewhere in the body. A sulfonamide concentration of 100 to 200 mgm. per cent in the urine is adequate in most instances. This can be obtained in infants and small children by giving one-half to one grain of the drug per pound of body weight per twenty-four hours in divided doses 3 or 4 times daily. The drug should be continued for several days after the urine has cleared (and a sterile culture obtained if this procedure is feasible). This usually involves a course of sulfonamide in diminishing doses of seven to fourteen days duration. The antibiotics or combinations of the sulfonamides and antibiotics are more effective in certain specific infections.

The results of treatment are so good in the majority of instances that it seems reasonable in the general practice of medicine to treat *female* infants and children with acute pyuria at home as outlined above without the aid of any laboratory procedures except the examination of the urine. If, however, the condition does not respond promptly or if there is a recurrence of the pyuria, the patient should be hospitalized for thorough investigation of the urinary tract. It has been recommended that in all cases of pyuria urinary tract investigation should be carried out after the acute infection has subsided. While the necessity for this in all cases may be questionable, there is no question as to the advisability of complete investigation in cases of chronic or recurrent pyuria.

The occurrence of pyuria in the *male* infant or small child has an entirely different significance and must always be considered as evidence of congenital malformation of the urinary tract until proved otherwise. For this reason, the male child with pyuria should always be hospitalized for study before treatment is begun. It is usually expedient to clear up the infection as far as possible before doing investigative procedures, but cultures and blood chemistry determinations should be obtained beforehand.

Investigation of the urinary tract should be carried out also in youngsters with less specific symptoms such as recurrent unexplained abdominal pain and unexplained malnutrition.

The various procedures employed in the investigation of the urinary tract and the methods of treatment of some of the anomalies which are encountered are illustrated in the following case reports.

CASE REPORTS

Case No. 1. S. B., a girl, was first examined at the age of 5 years. Intravenous pyelograms were performed because of a diagnosis of recurrent pyuria. The pyelograms were interpreted as normal. Because of further attacks of pyuria, the pyelograms were repeated three years later and no abnormalities were noted. During the next year she had even more frequent attacks of pyuria and at the age of 9 years retrograde pyelograms were done. The right kidney and ureter showed no evident abnormality except for slight kinking of the upper one third of the ureter. The left kidney seemed somewhat larger than the right and the kidney pelvis was slightly dilated. There was a definite kink at the ureteropelvic junction. In view of these findings the left kidney was explored and a plexus of aberrant vessels was found extending from the lower pole of the kidney to the aorta. These vessels lay across the left ureter at the pelvic junction. They were tied off and the ureter freed. Since that time there has been no recurrence of pyuria and the child's general condition has steadily improved.

Case No. 2. R. M., a 4 year old boy, was first admitted to the hospital because of polydipsia, polyuria, and protuberant abdomen of two years duration. He had a poor appetite and had been

on an inadequate diet. On examination he appeared malnourished and had a large abdomen. The urine contained a large amount of pus and had a low specific gravity; streptococcus, staphylococcus and colon baccillus were present in the culture. The blood nonprotein nitrogen was 55 mgm. per cent. Reflux pyelograms were done which showed bilateral hydronephrosis. A urethrogram showed slight enlargement of the verumontanum. The supracalicular portion of the urethra was narrow and elongated. The prostatic urethra appeared depressed backwards. The findings were interpreted as evidence of congenital hypertrophy of the vesicle neck. Nothing could be done about the situation and the child died a year and a half later. An autopsy was not performed.

Case No. 3. M. I., an 8 year old girl, was first seen in 1942 and gave a history of recurring pyuria for six years. Her weight was only 50 pounds. The urine contained albumin and pus with a green producing enterococcus on culture. No improvement was noted after a course of sulfadiazine. An intravenous pyelogram showed bilateral double kidneys with separate pelves and ureters on both sides. On each side there was marked dilatation of one ureter and hydronephrosis of one kidney. Left heminephrectomy was performed with removal of the dilated ureter.

Two months later she was very much improved and had gained 6 pounds although she continued to show pyuria. Ten months later she was hospitalized for study. At this time the results of examination of the blood, urine, and blood nonprotein nitrogen were normal. On an intravenous pyelogram, the kidney and ureter on the left appeared normal with less dilatation of the anomalous urinary pelvis and ureter on the right.

A letter from her family recently states that the child is healthy although she has not been examined during the past year.

SUMMARY

Pyuria is a relatively common condition in children and responds promptly to modern therapeutic measures when uncomplicated.

The urinary tract should be investigated thoroughly in all males with pyuria and in all females in whom there is persistence or recurrence of the infection in an effort to discover remedial congenital malformations before irreparable damage has occurred.

TREATMENT OF HYPOSPADIAS

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AND
B. MARVIN HARVARD, M. D.
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Plastic operations on the penis are performed for psychologic and physiologic reasons. Despite the fact that the functions of procreation and micturition are foremost, it must nevertheless be remembered that a malformed organ may be the source of serious mental trauma. For these reasons, the surgeon should approach the problem of hypospadias with a technic which is applicable to all degrees of the deformity and at the same time completely relieves the associated chordee; moreover, the technic should be capable of performance by any reasonably skilled surgeon and it should produce a hairless, elastic urethra with no tendency to contract. In addition, it should be capable of completion during the preschool age.

Various technics have been employed in an attempt to fulfill these ideal requirements, most of which, in our opinion, have not satisfactorily met them. Some technics are inadequate because they are not applicable to all degrees of the deformity. Frequently, the artificial urethra contains troublesome hairs upon which crystals are deposited. More often, the new urethra is inelastic and requires constant dilation. Not infrequently, the technic itself is too complicated for general usage. In some instances six to eight successive stages may be required for completion.

Before an attempt is made to create an artificial urethra, it is of primary importance to correct the associated chordee. Obviously, if the penis cannot be permanently straightened, it is useless to proceed further. The importance of this simple step cannot be overemphasized. It is advisable that the chordee be corrected as early as possible in order to enable maximum growth

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of the penis. The optimum age for performance of the straightening operation is eighteen months.

The technic of the straightening operation consists simply in incising transversely across the penis below the glans and continuing the incision into the prepuce on either side. The penis is then stretched upward and any restricting bands are incised transversely. After these have been severed so that the penis is easily straightened and remains straight, the transverse incision is closed longitudinally with interrupted catgut sutures. Occasionally, a longitudinal relaxing incision on the dorsum of the penis may be required. This is left open.

A detailed study of the various technics presently employed for the correction of hypospadias will not be presented here. However, for comparison, a few of the more commonly employed technics will be briefly described.

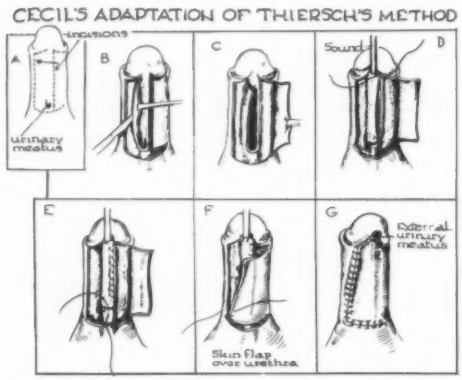

Fig. 1: Thiersch's method for correction of hypospadias. (A) Broad parallel pedicle flaps are outlined eccentrically on ventral surface of penis from just behind corona to slightly posterior to hypospadiac opening; they are then joined by a transverse incision posterior to the meatus. (B) That flap whose pedicle is nearest the midline is dissected free and used to form the new urethra over a catheter; the remaining flap is brought over the new urethra and sutured to opposite side.

Thiersch's Method (*Fig. 1*)—Broad, parallel pedicle flaps are outlined eccentrically on the ventral surface of the penis from just behind the corona to slightly posterior to the hypospadiac opening. They are then joined by a transverse incision posterior to the meatus. That flap whose pedicle is nearest the midline is dissected free and used to form the new urethra over a catheter. The remaining flap is brought over the new urethra and sutured to the opposite side.

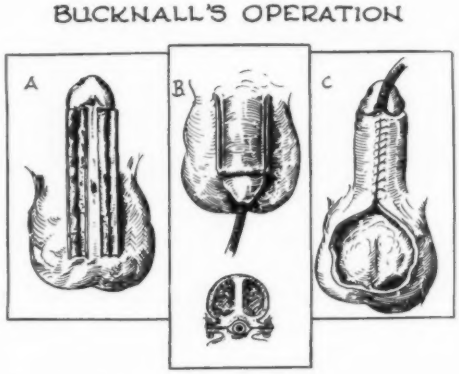

Fig. 2: Bucknall's method for correction of hypospadias. (A) Two long, parallel lateral incisions are made over the penis and extended on the scrotum. The lateral flaps are then dissected upward but a median strip of tissue with the hypospadiac orifice in the center is left intact. (B) Small catheter placed in meatus and penis brought down over scrotum to midline. (C) Margins of central strip approximated over catheter to form new urethra. Lateral flaps brought together with broad surfaces apposed.

Bucknall's Method (*Fig. 2*)—Two long, parallel lateral incisions are made over the penis and extended on the scrotum. The lateral flaps are then dissected upward, but a median strip of tissue with the hypospadiac orifice in the center is left intact. A small catheter is placed in the meatus and the penis brought down over the scrotum to the midline. The margins of the central strip are approximated over the catheter to form the new urethra. The lateral flaps are then brought together with the broad surfaces apposed. Following complete healing scrotal incisions are made parallel to the previously made skin flaps far enough laterally to provide ample coverage for the ventral penile surface. The defect in the scrotum is closed by simple approximation of the skin edges.

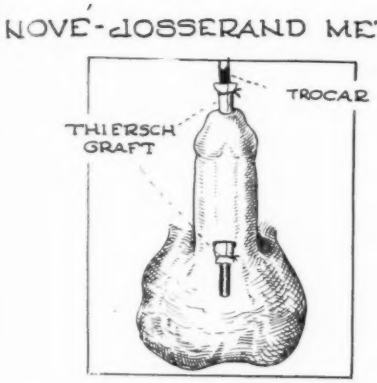

Fig. 3: Nové-Josserand's method for correction of hypospadias. Perineal urethrostomy established and hypospadiac meatus closed. Two months later long Thiersch graft wrapped around a tube is drawn through a trocar hole bored from perineal urethrostomy through glans.

Nové-Josserand's Method (*Fig. 3*)—A perineal urethrostomy is established and the hypospadiac meatus is closed. About two months later a long Thiersch graft is wrapped around a tube and drawn through a trocar hole bored from the perineal urethrostomy through the glans.

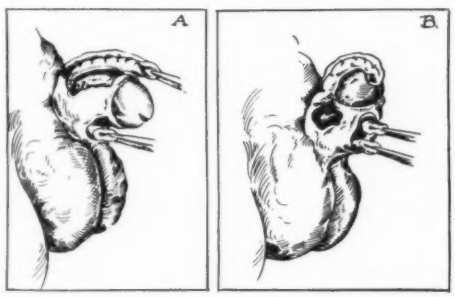

Fig. 4: Davis' method for correction of hypospadias. (A) Pedicle tube graft is created from skin of dorsum of penis and prepuce with its fixed end nearest base of penis. (B) Graft drawn through opening in glans and sutured directly to freed ends of hypospadiac urethra.

Davis' Method (*Fig. 4*)—A pedicle tube graft is created from the skin of the dorsum of the penis and the prepuce with its fixed end nearest the base of the penis. This enables the penis to be bent over dorsally so that the graft may be drawn through an opening in the glans and sutured directly to the freed ends of the hypospadiac urethra. The dorsal end of the graft is freed in about two weeks.

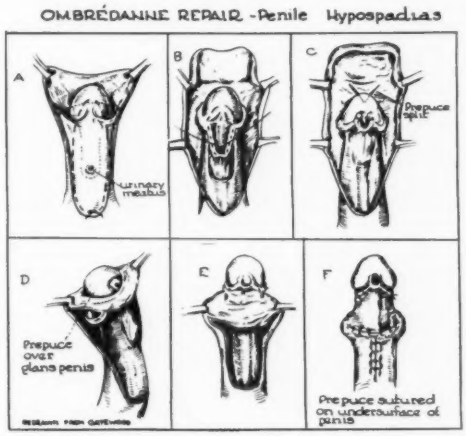

Fig. 5: Ombredanne's method for correction of hypospadias. (A) Pouch of skin created from hypospadiac meatus to glans. Linen thread basted in periphery of sutured sac. (B) Parallel incision made on shaft and carried up onto prepuce and around its coronal attachment. (C) Lateral flaps created on shaft. (D) Central portion dissected upward but median pedicle from meatus to coronal sulcus left intact. (E) Purse-string linen suture then drawn down against the catheter.

Ombredanne's Method (*Fig. 5*)—In this "sac" method a pouch of skin is created extending from the hypospadiac meatus to the glans. A linen thread is basted in the periphery of the sutured sac as shown in figure 5A. An accompanying parallel incision is made on the shaft and carried up onto the prepuce and around its coronal attachment. The two layers of the prepuce are carefully separated. Lateral flaps are created on the shaft. The central portion is dissected upward but a median pedicle from the meatus to the coronal sulcus is left intact. The purse-string linen suture is then drawn down against a catheter. This maneuver completes the pouch. The large flap of skin created by the lateral and preputial dissection is incised in such a fashion as to allow the glans to be drawn through it; this provides an apron of skin to be used in covering the ventral surface. Healing is allowed to take place. At a later stage the

urethral sac is drawn up through a prepared site in the glans and fixed.

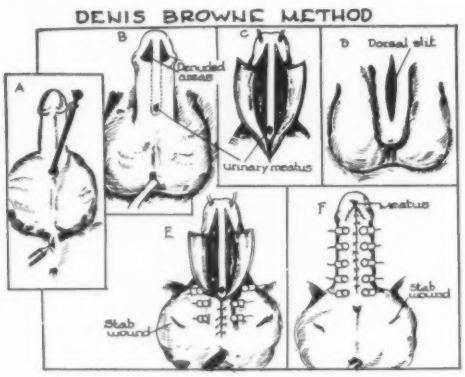

Fig. 6: Denis Browne operation for correction of hypospadias. (A) Diversion of urinary stream. Malecot catheter in bladder on sound. With diathermy knife, incision made over point until catheter exposed. (B) Two parallel incisions made along ventral surface of penis and brought together immediately behind meatus. Triangular area of epithelium removed from either side of glans penis. (C) Dorsal slit made from base of penis to coronal sulcus; edges separated widely. (D) Approximation of lateral flaps by double row of sutures. Sutures fixed with crushed shot or plastic beads held in place by crushed aluminum bands. (E) Completed operation.

The Denis Browne Method (*Fig. 6*)—This most recently developed method for the repair of hypospadias is based upon the principle that a strip of intact skin acts as a nucleus from which epithelium spreads to line the newly formed canal. The technic is simple and can be performed by any reasonably capable surgeon. Moreover, it can be completed before the patient reaches school age. After the straightening operation has been done at a previous date, this method requires only one stage. The technic involves several distinct steps:

1. *Diversion of the Urinary Stream* (*Fig. 6A*)—A Malecot catheter is inserted to the bladder on a sound; the sound is partially withdrawn and its curve reversed so that it points in the perineum. With a diathermy knife a short incision is made over the point until the catheter is exposed. It is then grasped with a forceps and its distal end drawn through the opening. Gentle traction is placed upon the catheter until its wings are felt against the internal sphincter. It is tested with an irrigating syringe to be sure that its position is such that the bladder will be kept completely empty. As soon as this is determined, it is sutured to the perineum.

2. Two parallel incisions are made along the ventral surface of the penis and are brought together immediately behind the ectopic meatus. This outlines the strip of intact skin which constitutes the nucleus from which epithelium lines the tube. A triangular area of epithelium is removed from either side of the glans penis, as indicated in figure 6B.

3. Lateral flaps are raised and dissected free and the scrotum is punctured on either side to allow free egress of blood and serum which may accumulate under the flaps after suturing has been completed.

4. A dorsal slit is made from the base of the penis to the coronal sulcus; its edges are separated widely in order to prevent any tension upon the suture line which may result from edema in the immediate postoperative period. This is left open and heals promptly without a troublesome scar.

5. The lateral flaps are approximated by a double row of sutures. The first row is composed of interrupted through-and-through silkworm sutures placed half an inch away from the edge of the skin flaps and adjusted so that when locked there is an eighth of an inch slack between the flaps; the sutures are fixed with crushed shot or plastic beads held in place by crushed aluminum bands (Fig. 6D). The skin edges are then approximated with the smallest possible catgut sutures applied with the utmost care to avoid inversion of the skin edges. After the entire ventral surface of the flaps has been approximated, the flaps are then lifted upwards and sewn to the tip of the glans so that the raw undersurfaces of the penile flaps are in contact with the raw surfaces produced on either side of the glans penis (Fig. 6E). This brings the new meatus up to about the normal position. A dressing is not required unless there is some oozing at the end of the operation in which case a light pressure dressing is applied but it should

be removed as soon as the oozing has stopped.

After the patient has been returned to the bed, the urethrostomy tube is attached to a bedside bottle for continuous drainage. Penicillin and sulfonamides are given postoperatively to prevent infection. The sutures may be removed at the end of a week or ten days and the urethrostomy tube a day or two later. Some urine may be expected to pass through the urethrostomy opening for the first twenty-four hours after the tube is removed but it is usually completely closed by the end of forty-eight hours. The operation is completely finished in the majority of these patients and they are ready to be discharged by the end of the fourteenth postoperative day.

The two most important steps in this operation are (1) diversion of the urinary stream and (2) the dorsal slit, which prevents any possible tension on the suture line during the period of edema. From our experience with the various methods of treating hypospadias the Denis Browne operation appears to withstand more complications during the postoperative period without failure than the majority of other methods. It is simple and easy to perform and is completed in one stage. It requires a short period of hospitalization, a factor of tremendous economic importance. Finally, it is applicable to all types of the deformity.

SUMMARY

Some of the more commonly employed operations for the correction of hypospadias are briefly described. These include the method of Thiersch, Bucknall, Nové-Josserand, Davis, Ombredanne, and Denis Browne. The Denis Browne operation, which is based on the use of a strip of intact skin which serves as a nucleus from which epithelium spreads to line the newly formed canal, in our opinion, has several advantages over the other methods. It is not only simple to perform but can be completed in one stage and is applicable to all types of the deformity. In addition, it withstands more complications during the postoperative period and requires a shorter period of hospitalization than most of the other methods.

CONGENITAL AND INFANTILE APHASIA*

REVIEW OF LITERATURE AND REPORT OF CASE

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A congenital defect of the central nervous system may lead to three types of faulty speech development: receptive in nature—sensory aphasia; expressive—motor aphasia; or mixed—sensory-motor aphasia. Although central lesions in infantile and adult aphasias may conceivably be similar, resulting speech disturbances in children in whom speech is not yet fully developed are not comparable to those in adults; i.e., loss of or deficient motor speech and other linguistic skills, such as reading, writing, and comprehension of the spoken word.

The term aphasia was noted in the literature as early as 1867[1] and the problem fully recognized in 1926 after Head's publication.[2] Leibman[3] delineated the three types of aphasia mentioned above every clearly in 1930. However, there is still a great deal of confusion regarding relative frequencies among children who present retardation or nondevelopment of speech. This confusion immediately suggests that speech pathologists, clinical psychologists, and physicians should be acutely aware of the condition in order that such children may not be misdiagnosed as cases of deafness, emotional disorder (including voluntary mutism) or mental retardation. In this paper, only the term aphasia will be used, such terms as idioglossia, paraphasia, word deafness, and congenital auditory imperception being avoided for semantic reasons.

ETIOLOGICAL FACTORS

Since this condition dates from infancy, most causative factors are operative during

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the prenatal or neonatal period. It must be assumed that the cerebral defect consists in incomplete development of or damage to association tracts concerned with interpretation of sound, particularly of language, and/or with the production of meaningful speech. Obviously, the cerebral defect may extend further with other associated widespread neurological manifestations. The cerebral lesion may be an inherited selective defect in development of this area of the brain. Allen[4] states there is a familial trend in one-third of all cases of sensory aphasia. Rogerson[5] reported two cases of sensory aphasia in one family. Worster-Drought[6] states that most sensory aphasics are males (5 to 1). Prenatal conditions or any trauma to the brain, if bilateral, may result in infantile aphasia. Perhaps an important traumatic factor is cerebral anoxia, but cerebral hemorrhages could conceivably be causative. Isoimmunization to various blood types may be a prenatal etiologic factor and central nervous system infections may be a postnatal causative factor.

CLINICAL ASPECTS

The most frequent reason for which the parents of aphasic children consult the physician is the child's failure to develop, or respond to speech, or even to other sounds. In the primarily receptive type of aphasia with failure to interpret sounds, parents frequently realize that the children's hearing is not greatly impaired and careful audiometric tests bear this out. Any fragmentary speech which may develop is usually defective and sounds like gibberish except to persons accustomed to it. These children may interpret visual signs readily and usually appear intelligent despite their inability to comprehend spoken words.

Children who present the motor or expressive form of aphasia do not speak at all or make only primitive sounds. Usually they cannot repeat any words although they demonstrate some understanding of speech and do not exhibit the obvious auditory inattention characteristic of children with sensory aphasia. There may be incoordination not only of speech organs but of other muscular systems as well. Children with milder forms of motor aphasia may develop speech without any specific therapy, although there may be a residual linguistic disability. Some aphasic children suffer from a mixed form with defects not only in acoustic interpretation but also in the motor sphere. Obviously, the therapist confronted with a child suffering from a severe degree of sensory-motor aphasia has the problem of directing therapy not only toward language comprehension but also toward speech production.

Aphasic children may have any degree of intellectual potential; but their mental status cannot be evaluated fairly by means of ordinary verbal psychometric tests. In an inadequate environment with no specialized educational facilities these children may become, as Worster-Drought[6] states, "imbeciles from deprivation." They fail because of inadequate training and not because of defective intellectual potential. Some of these children exhibit compulsive abnormal behavior, which may be in part the result of emotional trauma from constant exposure to situations in which the child attempts to perform beyond his capacities.[7]

Because of the apparent confusion which exists as to infantile aphasia, the writers undertook to inquire into the syndrome. Questionnaires concerned with infantile aphasia were mailed to forty-five speech pathologists. A response was obtained from seventeen of this group. Six replied that they were not in situations where they might observe such cases.

Five replied that they had encountered some cases but that case reports were not available for summary. One speech therapist reported that an occasion to resort to that diagnosis in children had never arisen in his experience. From five speech therapists who returned their questionnaires, together with case reports, a total of 34 cases were collected (up until 1940 only 50 cases were reported).[6] Among these 34 patients, the age at time of diagnosis varied from thirty-four months to twenty-eight years with a mean age of seven and one-half years. Sex distribution was fairly even—

18 males and 16 females. However, a selective factor was operative since one therapist who reported 19 of the cases had had dormitory facilities for twice as many females as for males. Among possible causative factors listed were included prenatal viral infection—4, birth injury—3, cerebral anoxia—3, prematurity—2, and encephalitis—1. Diagnosis made prior to diagnosis of aphasia included deafness—18, mental retardation—11, and emotional problem—3. Twenty-two of these children received intensive speech therapy. Nineteen of them made uniformly good progress; 1 made fair progress, and 2 made slow progress with therapy. Many were attending regular classes in public schools following varying periods of speech therapy. Two of these children, however, were having a great deal of difficulty making adequate social adjustments. Mental ability was judged to be average or dull normal in 19, retarded in 2, and unknown in 13. Severe hearing loss was noted in 4 instances and slight hearing loss in 3 cases. A suggestive familial trend was noted in only 1 instance among the 34 case reports—the father of 1 girl also suffered from sensory aphasia.

Excerpts of letters received in reply to the questionnaire were of value in formulating the trend of thought and variance of opinion even among speech pathologists in regard to the problem of infantile aphasia. One director of a university speech clinic wrote:

"—we seldom, if ever, use the term aphasia with reference to loss of speech in childhood. We have seen a few aphasias in children in which the symptoms were obviously the result of cerebral trauma. I do not recall any children whose acquisition of speech has been delayed and in whom we felt there was a cerebral condition comparable to that in adults—the term aphasia is so loosely used with respect to children."

A director of another speech and hearing clinic in another university of comparable size and the same locale wrote:

"We do see, from time to time, children whose delay in the acquisition of speech seems to stem from a type of infantile aphasia . . . I agree with you that the problem of aphasia dating from infancy, which perhaps we have catalogued too glibly under the heading 'delayed speech,' is in need of investigation."

A third director of a university speech clinic stated:

"At my present stage of thinking, my skepticism regarding the reality of such a syndrome has been considerably reduced—but this has been on the strength of cases reported to me by colleagues whose experience and diagnostic thoroughness I respect, rather than on the basis of cases coming through our clinic."

A director of speech in a clinic at an eastern college wrote:

"As I see it now, the mistakes of the past decade have been to overlook aphasia and to give too much weight to deafness and feeblemindedness. In the past decade, moreover, too little attention was given to schizophrenia. At the present time there seems to be a tendency to throw too many cases into the aphasic file. I am sure that many cases go into that file that are really infantile schizophrenics."

A speech pathologist in a hospital wrote:

"I know that there are children who develop speech late and in school show specific disabilities with evidence of good general intelligence. It seems reasonable to me that in the preschool period these children either are not diagnosed or are misdiagnosed because of the difficulty of making a differentiating diagnosis at this age . . . at school age they are apt to be missed, too, because then they can talk. From the recoveries we've seen in children from aphasia resulting from accident, it's obvious to me that this would be expected to happen."

A director of a private school for speech correction stated:

"I have always thought that there were many aphasic children in the institutions for the feebleminded and also the state schools for the deaf."

As a corrollary, a speech pathologist in a school for cerebral-palsied children wrote:

"I have been interested in this problem for some time because I am convinced that it is a factor in certain cases of nonverbal cerebral-palsied children."

CASE REPORT

History. T. C. was the second born male infant of very understanding parents. The family history was noncontributory and the sibling normal. During the third month of pregnancy, the mother had some type of viral disease with a morbilliform eruption, lymphadenopathy, and pharyngitis. The clinician at that time made a presumptive diagnosis of infectious mononucleosis rather than rubella but with no confirmatory laboratory proof. The labor was induced post-term and the birth process normal except for a dry labor. The infant's birth weight was 5 pounds 7 ounces. Very little subcutaneous fat was present and because the infant appeared to be very weak he was cared for in a premature nursery. As the infant de-

veloped, he was a constant feeding problem, and it was difficult to introduce any solid foods. At one and one-half years of age, because of anorexia, poor state of nutrition, and anemia, he was given several small transfusions.

Physical and motor development were delayed, with sitting at eleven months and walking at eighteen months. Between two and three years of age, there was still no evidence of any speech development, and the parents were concerned because at various times the child failed to respond to sound. The patient was seen in a hearing clinic, and, although no formal audiometric tests could be done, it was felt that the child had some hearing impairment. This, together with his motor retardation, led to the general impression that this boy was seriously retarded. The child was brought to us because of his delayed speech development. A psychological examination was suggested prior to instituting any speech therapy. The psychologist who saw this child briefly in consultation at two and one-half years of age suggested to the parents that the boy be institutionalized as soon as feasible because he felt that the boy was a hopeless problem of generalized mental deficiency. Despite this discouraging report, the parents still felt the situation was not hopeless, and a further psychological evaluation was done.

Mental, Hearing, and Speech Evaluation. At the age of thirty-two months, the child was seen in consultation by Dr. Edgar A. Doll of the Devereaux School and Drs. Helmer Myklebust and Harold Westlake of the Speech and Hearing Clinic, Northwestern University. The following report is a summary of their findings:

Mental Evaluation.[8]

Psychological observation suggested at least average mental capacity with presumption of better-than-average potential. This impression was sustained throughout the examination in spite of limited language comprehension and response and in spite of descriptive reports of mild behavior problems. He was alert, attentive, responsive, and showed good discriminative judgment. His comprehension of the environment significance, his manipulation of objects, as well as his over-all behavior and reports of activities, gave further confirmation of at least average potential. This impression gained weight in the face of handicaps which apparently inhibited the full expression of his potential.

Administration of the Vineland Social Maturity Scale with mother and father serving as mutual informants yielded a social age score of 2.8 years, social quotient of 100. Detailed analysis of this examination showed a mild degree of retardation of self-help activities, in eating and dressing, and a specific retardation in language use. If these handicaps were discounted as inhibiting full expression of his capacity, the social score would rise to about 3.5 years, or a social quotient of about 125. Such evaluative scoring served as inferential evidence to confirm the impression of underlying better-than-average mental capacity. It was further inferred that the retarded expression in self-help activities was a consequence of environmental solicitude in relation to specific handicaps. The retardation in speech was construed as due to developmental language deficiency of the order of possible congenital aphasia.

Hearing Evaluation.[9]

This examination revealed that the patient had normal hearing and voice quality. Furthermore that his motor skill and mental capacity fell within normal limits. A serious disturbance was revealed in the area of language comprehension. On the basis of these findings, the following diagnosis was made: Aphasia—mixed type, predominantly receptive with mild expressive involvement.

Speech Evaluation.[10]

The patient appeared ready for speech. He performed the movement patterns basic to speech easily with apparently normal muscle tonus. He followed rhythm patterns accurately. Phonation was initiated effortlessly, and the breathing pattern was favorable for a speech pattern. Throughout the interview, he responded more readily as well as more accurately to visual clues than to auditory clues.

Conclusion.

Patient is of at least average, and probably better-than-average intellectual capacity, without noteworthy hearing impairment but with developmental aphasia. There are implications of congenital central nervous system impairment which presumably produced delayed motor development, impairment in eating, and interference with speech development. Etiology, while obscure, is more definitely suggestive of the prenatal viral infections of the type seen in rubella.

Prognosis is favorable both in behavior expression and in more recent phases of the developmental history. Behavior may be improved by gradual improvement in self-discipline and corresponding reduction in personal dependence.

Progress Report. Intensive speech training was given at the L. S. U. Speech Clinic. In addition, the parents afforded not only speech stimulation in the home but also followed closely procedures used in the speech clinic. At the onset of his speech lessons, he was able to make only a few sounds, and his vocabulary was limited to two or three garbled words. After ten months of speech therapy, his vocabulary had increased to about one hundred ten words. His muscular coordination and activities as well as his social behavior progressed at a more rapid rate than formerly. Although eating habits were still a problem, there was a remarkable stride in his personal independence as compared to his status prior to speech therapy.

COMMENT

It behooves all professional personnel concerned to be fully cognizant of the syndrome of aphasia in childhood. It is difficult to reconcile the divergence of opinion, even among speech pathologists, as to the frequency or even actuality of this entity; but one cannot fail to be impressed by the number of cases which some have encountered. The response of the patient reported in this paper to intensive speech therapy (training associated with visual, auditory, and tactile clues) lends further credence to the existence of this syndrome. Even assuming that this is an uncommon cerebral defect, it would seem far wiser to err on the side of frequent diagnosis, for fear that a single case will be missed, rather than of refusal to ever make such a diagnosis. It would be tragic to fail to recognize a child wtih infantile aphasia and label the child a mental deficient. An aphasic child with such a label very likely will eventually become socially inadequate simply for lack of specialized educational facilities. With proper speech training and education, these children can become useful, active members of society.

The possibility also arises that there may be many degrees of infantile aphasia. Perhaps many of the four and five year old children with delayed speech which we, as pediatricians, so reassuringly pass off to the parents as of no consequence are actually mild cases of infantile aphasia. These children may begin to talk "under their own power" simply because the cerebral defect is of lesser degree. Speech clinics might find it profitable to investigate groups of children who "take off" late in talking. Careful histories might reveal common etiologic factors productive of cerebral lesions, and speech training might prove to be effective.

SUMMARY AND CONCLUSIONS

The clinical features of infantile aphasia include failure or delay in development of speech. When speech develops, it is frequently garbled. Hearing and intelligence may be normal although both are difficult to evaluate. Abnormal behavior may appear in these children simply because they lack normal opportunities to express themselves.

It is pointed out that many of the children of four to five years of age with delayed speech development may not simply be "deviates from the norm" but may actually suffer from mild degrees of aphasia. Earlier recognition and proper guidance for milder types of aphasia will depend ultimately on better definition of the pattern and rate of normal speech development.

At present, there apparently is little or no agreement either as to frequency or actuality of this syndrome in childhood. Unfortunately, mild cases are apt to be passed over and more severe ones are often tragically mislabeled as mental defectives.

REFERENCES

1. Wilbur, H. B.: Am. J. Insanity 24:1, 1867.
2. Head, H.: Aphasia and Kindred Disorders of Speech, Cambridge, 1926.
3. Leibmann, A.: Horstümmheit (Apahsia), Deut. Med Woch. 56:920, 1930.
4. Allen, I. M.: Speech defects apparently congenital in origin, Brit. J. Child Dis. 29:98, 1932.
5. Rogerson, C. H.: Congenital auditory imperception (Word Deafness), Guys Hosp. Rep. 84:237, 1944.
6. Worster-Draught, C.: Congenital auditory imperception (congenital word deafness) and its relation to idioglossia and allied speech defects, Med .Press, 110:411, 1943.
7. Dozier, P.: Etiological and clinical types of so-called "nerve deafness"—From affections of the brain (A) Organic factor. Congenital word deafness, Laryng. 47:516, 1937.
8. Personal Communication from Dr. Edgar Doll.
9. Personal Communication from Dr. Helmer Myklebust.
10. Personal Communication from Dr. Harold Westlake.

DISCUSSION

Dr. C. H. Webb (Shreveport): I would like to add my word of approval of this subject brought before us by Dr. Van Gelder. I have had the opportunity of seeing two children who apparently had congenital aphasia, in one instance the sole disturbance, and in the other instance, associated with congenital heart defect. The latter child at three years of age had correction of the congenital heart defect which resulted from an attack of German measles in the mother at 2½ months gestation. The correction was done at John Hopkins, and at the same time a careful study of the child was made, because she had not started talking. There was a question as to whether this was due to congenital deafness or congenital aphasia, but the final conclusion reached there was that it represented congenital aphasia associated with congenital heart defect. Another child, whom I have seen within the past two months, at five years of age had been considered by a half dozen physicians and the family as a mental deficient because of the lack of speech. However, the child had acquired a very considerable ability to make his wants

known and to respond to visual instruction. Careful study indicated that this child also did not have mental deficiency. The last report I had indicated that probably the hearing was adequate and that the difficulty was on the basis of aphasia. We have had during the past two years a special class in speech training in the schools in Shreveport and a perfectly grand job is being done there with some of the children. We appeal for recognition of these children's difficulties, keeping them out of the category of mental deficiency and thinking more of defects of this type.

Dr. Myron Wegman (New Orleans): There is very little I can add to the problem of aphasia which Dr. Van Gelder has discussed so thoroughly, but I should like to call brief attention to some of the other problems of communication which are implicit in this field. Many schools have now become much more aware of the reading and writing difficulties which are perhaps as important as speech. I have seen instances in which persons who had reached adult age and were functioning at far less than their intellectual capacity had new pages of life opened by specific remedial reading instruction. This is a very important subject and one which I am very happy to have brought before this society.

Dr. VanGelder (In conclusion): I am happy to hear that Shreveport has a speech and hearing program; unfortunately, in Baton Rouge we do not have. Personally, the case I reported today is the first child with aphasia that I have recognized. Undoubtedly, I have missed some cases prior to this time. Over the past year, since becoming aware of the problem, we have made presumptive diagnosis of aphasia in 3 more children. One of the problems is to differentiate these children from the deaf. It is impossible to do satisfactory audiometric examinations on the younger children and one must rely on the judgment of experienced personnel in this field. Of course I think the big problem is differentiating these children from mental deficiencies. I must plead with you that we should not rely upon the average psychologist to make the diagnosis. It really takes an interested and highly specialized psychologist to work with these children and to give us a proper mental evaluation. I know that at least in the cases we have observed that has been our big problem—to find a psychologist who can give us the proper mental evaluation.

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CARE OF THE ACUTE POLIOMYELITIS PATIENT IN THE HOME AND IN THE LOCAL HOSPITAL

Acute anterior poliomyelitis is an endemic and epidemic disease. Each summer in recent years has seen an increase in the number of cases and problems.

The family sees the patient suddenly stricken, possibly with disastrous results. The public sees the end picture, which is usually a cripple. These two facts have constituted a background against which many phases of the disease have been emotionally displayed. Widespread interest has been aroused. Much investigation is in process. As a result of increased knowledge and of nationwide experience, the voice of some authorities calls for a middle of the road course in the social planning and the therapy of the disease. It is advised now that many patients with polio be treated in the home. Where circumstances are not suitable for this care, the local hospital is advocated. Various reasons for this may be briefly presented.

In an epidemic it is impossible for all patients with polio, or suspected of developing it, to be cared for in established polio centers. The admission of suspected cases crowds out the patient seriously affected with the disease. When the patient is in the hospital for even a short time, there is disruption of the parent-child relationship. This can best be developed and maintained in a normal home environment. It is apparent that the removal of the child from the home does not free the other members of the family from risk of the disease. In the words of Francis, it is necessary to recognize the significance of the family as a focus of dense infection in outbreaks of poliomyelitis. One member of the family group may develop paralysis, but the others carry the virus as well. It is now believed that probably only 1 in 100 of those who are infected with the virus develop the paralysis.

Accordingly, it is felt that suspected, nonparalytic cases, and cases with partial paralysis of the lower extremities, should be kept at home if a physician's attention is readily available, and if there is a local hospital equipped with a respirator ready for emergency use. It is also necessary that facilities in the home for the care of the sick child should be adequate and the attending physician should feel that the particular case can be cared for at home. Most polio patients, especially children, make a rapid recovery, except for residual paralysis, within a few days or weeks of the development of the disease. Parents and nurses can be taught to carry out much of the physiotherapy that is desirable in both the acute and convalescent phases. Firm mattresses, bed boards, and foot boards are readily available. Sand bags to maintain the patient's position can easily be made,

and if not available, bags of salt can be used. Pads of cotton and small pillows can be utilized when such support is needed. A washing machine with a heating unit attached makes a good hot pack machine. Wool for the packs can come from cutting a soft blanket, and they can be wrung out in the wringer of the washing machine.

The question as to whether moving a polio patient increases the intensity of the disease, and whether other physical activity during, before, and preceding the onset of the paralysis may be detrimental, is one about which controversial opinions have been formed. Until further clarification is at hand, it would seem a commonsense attitude that polio is like other disease in the respect that the greater the severity of the disease process, the more the necessity for reduction of physical activity. If this is true, moving the patients from home to distant polio centers may be detrimental in some instances.

Along these same lines, *The Polio Post*, which is the information sheet of the National Foundation for Infantile Paralysis, is advocating that the milder cases of Polio stay at home, and has recently established facilities for grants-in-aid to cover home care under certain conditions, and it is suggested that the National Foundation's epidemic aid appropriations will probably be used increasingly to obtain good care for polio patients in their homes. Up to the present time appropriations for home care have been made to State Health Departments. It is projected that they could also be made to hospital centers for personnel to be used in the field.

Concerning facts of this general nature, Drs. Simon and Wegman and Drs. Wickstrom and Platou of the L. S. U. and Tulane Medical Schools, have sent out a joint letter to the membership of the Society, urging the physicians to prepare for the polio epidemics that may be expected in succeeding summers. It is recommended to utilize home care for the patients who are suitable and save hospital beds and space in the polio center for those types of the severe cases that cannot be otherwise properly treated. The advice contained in the letter is most timely. Putting it into practice would in some measure minimize the panic that a polio epidemic spreads in a community. It would also relieve much emotional stress on the part of the polio patient and the parents.

Plans to meet polio adequately must be made before the epidemic begins.

ORGANIZATION SECTION

The Executive Committee dedicates this section to the members of the Louisiana State Medical Society, feeling that a proper discussion of salient issues will contribute to the understanding and fortification of our Society.

An informed profession should be a wise one.

IMPORTANT

Let us not lose one of our delegates to the AMA. If you did not pay your 1950 AMA dues prior to December 31, 1950 or within 30 days following notification by the AMA of your delinquency, your name was automatically removed from the roster as a member. Your 1951 AMA dues will not be accepted until your delinquent 1950 dues have been paid.

If however you have already paid your 1950 dues you should pay your 1951 dues not later than December 31, 1951.

If more of our members do not continue their AMA membership we are going to lose one of our delegates to the AMA and this would be most unfortunate as the southern states are already represented by too few delegates.

Won't you please send your renewals for membership to your parish society, the Louisiana State Medical Society and the American Medical Association promptly so that our status will not be impaired and we can continue to have proper representation in our national association.

Of course, you know the $25.00 AMA dues entitle you to full membership, including the AMA Journal, which is priced to individual subscribers at $15.00 per year.

You can readily see that this makes you pay only $10.00 for membership in your national organization with all its benefits. You cannot afford to deny yourself these privileges and benefits. Don't forget to send in your dues.

Your cooperation, for the good of organized medicine, will be appreciated.

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NATIONAL AND LOCAL MEDICAL LEGISLATION

Though it be a fact that the Senate and Congress of the United States are on vacation, this is a good time to put our house in order, to rebuild our fences and to prepare our defenses to combat socialized or federalized medical bills coming up in Washington when the next Congress convenes in January, 1952.

Our friends of free enterprise medicine in Congress always welcome any suggestions they can get from the profession in defense of their action in support of or against any pending medical bills.

In writing to these Senators and Congressmen, always, when possible, give clear cut reasons for requesting their support or nonsupport of any and all bills up for action, either before the respective committees or on the floor of the Senate or House of Representatives. This will assure them that we are sincere and sufficiently interested to warrant their sincere consideration of our requests for enlisting them in our behalf. Louisiana Senators and Congressmen are as follows:

Senator Allen J. Ellender
Senator Russell B. Long
Representative F. Edward Hebert, 1st District
Representative Hale Boggs, 2nd District
Representative E. E. Willis, 3rd District
Representative Overton Brooks, 4th District
Representative Otto E. Passman, 5th District
Representative James H. Morrison, 6th District
Representative Henry D. Larcade, Jr., 7th District
Representative A. Leonard Allen, 8th District

Not only wire or write the Senators and Congressmen from this state, but also the chairmen of the respective committees before which bills will come up for hearing. Find listed below the personnel of the two important committees which handle the bulk of health and medical legislation in the Senate and House.

SENATE COMMITTEE ON LABOR AND PUBLIC WELFARE

Democrats

James E. Murray, of Montana, Chairman
Lister Hill, of Alabama
Matthew M. Neely, of West Virginia
Paul H. Douglas, of Illinois
Hubert H. Humphrey, of Minnesota
Herbert H. Lehman, of New York
John O. Pastore, of Rhode Island

Republicans

Robert A. Taft, of Ohio
George D. Aiken, of Vermont
H. Alexander Smith, of New Jersey
Wayne Morse, of Oregon
Irving M. Ives, of New York
Richard M. Nixon, of California

HOUSE COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE

Democrats

Robert Crosser, of Ohio, Chairman
Lindley Beckworth, of Texas
J. Percy Priest, of Tennessee
Oren Harris, of Arkansas
Dwight L. Rogers, of Florida
Arthur G. Klein, of New York
Thomas B. Stanley, of Virginia
John B. Sullivan, of Missouri
William T. Granahan, of Pennsylvania
John A. McGuire, of Connecticut
Thomas R. Underwood, of Kentucky
F. Ertel Carlyle, of North Carolina
John Bell Williams, of Mississippi
Peter F. Mack, Jr., of Illinois
Homer Thornberry, of Texas
Louis B. Heller, of New York
Kenneth A. Roberts, of Alabama

Republicans

Charles A. Wolverton, of New Jersey
Carl Hinshaw, of California

Leonard W. Hall, of New York
Joseph P. O'Hara, of Minnesota
Wilson D. Gillette, of Pennsylvania
Robert Hale, of Maine
James I. Dolliver, of Iowa
John W. Heselton, of Massachusetts
Hugh D. Scott, Jr., of Pennsylvania
John B. Bennett, of Michigan
Richard W. Hoffman, of Illinois
J. Edgar Chenoweth, of Colorado
John V. Beamer, of Indiana

Your Secretary has heard from the grapevine communication that some of our members are not familiar with the personnel of these respective committees or the names of our Senators and Congressmen and are therefore unable to contact them, which prompts the listing of above committees and names.

We sincerely hope that this will aid and stimulate all the parish and district societies to get busy in fostering some concerted action in helping to defeat those bills detrimental to organized medicine and supporting the ones favorable to the medical profession and our patients who, after all, benefit most by our efforts.

We would like to suggest that it is most important at this time to know how each candidate for Governor and the respective candidates for the State Senate and House of Representatives feel about our fight against socialized or state medicine and all cultists, and especially the chiropractors who are inadequately trained and wholly unqualified to treat our people.

We would like a statement of policy from each candidate as to how he stands on these important questions at issue, in order that the members of the parish societies and State Society might be informed prior to election.

It is high time that the members of the medical profession take more interest in our local and state elections and exert and exercise a greater influence upon our patients in the outcome of these elections.

"A hint to the wise" should be sufficient.

LOUISIANA STATE MEDICAL SOCIETY NEWS

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Wednesday of every month	Baton Rouge
Morehouse	Third Thursday of every month	Bastrop
Natchitoches	Second Tuesday of every month	
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport
Vernon	First Thursday of every month	

BLUE SHIELD AVAILABLE TO DOCTORS

Louisiana Physicians Service—the Blue Shield Plan—recently announced the availability of its new "N" Certificate for hospital, medical, surgical and obstetrical care, which is being made available to every doctor and his family dependents in the Orleans Parish area.

Blue Shield is the only plan sponsored by the Louisiana State Medical Society and by the Orleans Parish Medical Society for prepaid health care to include hospitalization, medical, surgical and obstetrical benefits. The Blue Shield hospital program includes 100 days hospital care per admission at $7.00 per day for the doctor, and $6.00 per day for his family dependents. For those who desire additional room allowances a rider may be added to the basic contract which will provide $11.00 per day for room and board in the hospital for the doctor and $8.00 per day room and board allowance for his family dependents.

The Blue Shield program also includes complete services for operating room, delivery room, oxygen therapy, basal metabolism, electrocardiograms, and routine laboratory. Liberal allowances are also made on medicines, drugs, serums and hospital diagnostic X-ray examinations.

The following is a schedule showing the cost on the different type room allowances:

MONTHLY BLUE SHIELD MEMBERSHIP DUES

	*	**
Doctor only (no maternity)	$1.85	$2.25
Doctor & Spouse (no mat.)	3.65	4.25
Doctor, Spouse and all children under 19 year of age (with maternity)	4.95	5.75

*—Room allowance of $7.00 per day for doctor and $6.00 per day for dependents.

**—Room allowance of $11.00 per day for doctor and $8.00 per day fo rdependents.

Within the very near future, Louisiana Physicians Service—Blue Shield—will mail to each physician a folder describing the plan in detail as well as an application card.

If you desire additional information you may contact Louisiana Physicians Service—Blue Shield —119 North Galvez Street, New Orleans, Louisiana.

MEETING OF THE AMERICAN ACADEMY OF DERMATOLOGY & SYPHILOLOGY

The tenth annual meeting of the American Academy of Dermatology and Syphilology will be held in Chicago at the Palmer House, December 8 through the 13, announces Dr. John E. Rauschkolb, secretary-treasurer, of Cleveland, (P. O. Box 6565), Ohio.

Principal sessions will be held in the Palmer House Monday through Thursday, December 10-13, with special courses in histopathology and mycology scheduled for Saturday and Sunday, December 8 and 9, at the medical schools of the University of Illinois and Northwestern University. Special courses in X-ray and radium, bacteriology of the skin, anatomy and embryology of the skin and special problems in dermatohistopathology will be held Saturday and Sunday at the Palmer House.

INTERNATIONAL COLLEGE OF SURGEONS

1952 Assembly: The Seventeenth Assembly of the United States Chapter, International College of Surgeons will be held in Chicago, September 2-3-4-5 at the Stevens Hotel.

FOUR-GROUP COMMISSION TO ACCREDIT HOSPITALS

The Journal of the American Medical Association has announced the establishment of a joint commission representing the American Medical Association, the American Hospital Association, the American College of Surgeons and the American College of Physicians for the accreditation of hospitals in the United States and possibly Canada.

The joint commission will be composed of 18 members: six appointed by the American Medical Association, six by the American Hospital Association, three by the American College of Surgeons and three by the American College of Physicians.

While the plan for establishment of the joint commission has already been approved by the four organizations, none of the 18 members have yet been selected. They will be appointed within a short time. The commission hopes to be in operation by January 1, 1952.

A minor change in the representation will be made if the Canadian Medical Asociation accepts an invitation to participate. In this event it will appoint one representative and the American Hospital Association will appoint an additional member from the Canadian hospitals, making the total commission membership 20.

MEETING OF THE FIFTH AMERICAN CONGRESS ON OBSTETRICS & GYNECOLOGY

The Fifth American Congress on Obstetrics and Gynecology will be held in Cincinnati, Ohio, March 31 through April 4, 1952, at the Netherland Plaza Hotel.

Sponsored by the American Committee on Maternal Welfare, the Congress will feature a comprehensive five-day scientific program covering the medical, nursing and public health aspects of the maternal care team.

The medical section program is headed by Dr. Woodard D. Beacham, New Orleans, in cooperation with the general program chairman, Dr. Nicholson J. Eastman, Baltimore. Chairman of the public health section is Dr. Herman N. Budesen, Chicago. The nursing program is headed by Miss Hazel Corbin, R. N., director of the Maternity Center Association, New York.

Congress registration fees are $5.00 for members and $10.00 for non-members. Further information, registration or reservations can be obtained by writing Mr. Donald F. Richardson, Executive Secretary, American Committee on Maternal Welfare, 116 South Michigan, Chicago 3, Illinois.

AWARD FOR OUTSTANDING RESEARCH IN THE FIELD OF INFERTILITY

The American Society for the Study of Sterility announces the opening of the 1952 contest for the most outstanding contribution to the subject of infertility and sterility. The winner will receive a cash award of one thousand dollars, and the essay will appear on the program of the 1952 meeting of the Society. Essays submitted in this competition must be received not later than March 1, 1952. For full particulars concerning requirements of this competition, address The American Society for the Study of Sterility, 20 Magnolia Terrace, Springfield, Massachusetts.

FELLOWSHIPS IN INDUSTRIAL MEDICINE

The Institute of Industrial Health of the University of Cincinnati will accept applications for a limited number of Fellowships offered to qualified candidates who wish to pursue a graduate course

of instruction in preparation for the practice of Industrial Medicine. Any registered physician, who is a graduate of a Class A medical school and who has completed satisfactorily at least two years of training in a hospital accredited by the American Medical Association may apply for a Fellowship in the Institute of Industrial Health. (Service in the Armed Forces or private practice may be substituted for one year of training.) Requests for additional information should be addressed to the Institute of Industrial Health, College of Medicine, Eden and Bethesda, Cincinnati 19, Ohio.

WOMAN'S AUXILIARY TO THE LOUISIANA ACADEMY OF GENERAL PRACTICE

The auxiliaries to the First and Second Districts of the Louisiana Academy of General Practice met November 2, 1951 in the home of Mrs. P. P. La Bruyere in Marrero, La. At this time plans for the annual Christmas party were formulated. The date for this party was chosen for December 9, and the home of Mrs. Daniel Murphy will be used. Toys presented by those attending will be donated to a charitable institution.

Honored at this meeting was Mrs. George Feldner who had been chosen by the radio program of the same name as "Woman of the Week." Mrs. Feldner is the past president of the Woman's Auxiliary to the Louisiana Academy of General Practice.

Convention plans for this organization's next annual convention in September were discussed.

The first annual Christmas party sponsored by the Woman's Auxiliary to the Louisiana Academy of General Practice will be held Sunday, December 9. All eight districts of Louisiana will hold these parties at the same time and will follow the same pattern.

Some of the plans to be used at the parties throughout the state will be as follows:

1) At the stroke of eleven the G. P.'s will be toasted by their wives.
2) Gifts of toys brought to the parties will be donated to some charitable institution at Christmastime.
3) Carols will be sung by all attending.
4) Hours of the party will be from seven to eleven-thirty.

BOOK REVIEWS

Friend of the People; the Life of Dr. Peter Fayssoux of Charleston, S. C., Columbia, S. C., Medical Association of South Carolina, 1950. pp. 151. Price $2.75.

Material regarding Southern physicians and medicine in the Revolutionary period has been meager; we are, therefore, especially glad to welcome this scholarly and interesting study of the life of Dr. Peter Fayssoux of South Carolina. His outstanding prominence in medicine is evidenced by his office as Surgeon-General and Chief Physician for the Southern Hospital during the Revolution. He was equally important in governmental matters in his day, espousing the cause of the "Anti-Federalists," "States-righters" of their day.

Peter Fayssoux was the son of a Hugenot immigré who came to South Carolina about 1737, achieved a measure of financial success in eight years and died leaving two small children, one of whom was Peter, born in 1745. After two years the widow was married a second time to James Hunter who became wealthy in his own right. Peter was thus able to go to Edinburgh for his medical education and there began a friendship with another American student, Benjamin Rush, which lasted throughout their lives.

Replete with reference to persons and events of these troublous times, and completely documented, the account maintains a sense of reality and unusual interest bespeaking the author's skill as a historian. Dr. Fayssoux was one of the organizers and first President of the Medical Association of South Carolina, by whom this volume is published. It constitutes a real contribution to the American medical history of the colonial period and of the South.

MARY LOUISE MARSHALL

PUBLICATIONS RECEIVED

Appleton-Century-Crofts, Inc., N. Y.: Atlas of Genito-Urinary Surgery, by Philip R. Roen, M.D., F.A.C.S.

Paul B. Hoeber, Inc., N. Y.: Clinical Allergy, a Practical Guide to Diagnosis and Treatment, by Samuel J. Taub, M.D., F.A.C.P. (2nd Edit.)

J. B. Lippincott Company, Philadelphia: Surgical Treatment of the Motor-Skeletal System, Parts one and two, by Fredric W. Bancroft, A.B., M.D., F.A.C.S., and Henry C. Marble, A.B., M.D., F.A.C.S.

W. B. Saunders Company, Philadelphia: Postgraduate Medicine and Surgery, Physical Medicine and Rehabilitation for the Clinician, edited by Frank H. Krusen, M.D.; Surgical Practice of the Lahey Clinic, by Members of the Staff of Lahey Clinic, Boston; The Specialties in General Practice, edited by Russell L. Cecil, M.D.

Charles C. Thomas, Publisher, Springfield, Ill.: Outline of Fundamental Pharmacology, by David Fielding Marsh; Studies in Medicine, A Volume of Papers in Honor of Robert Wood Keeton, by various contributors.